Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

SEP - 1 1994

RECEIVED 1994 HAZARDOUS WASTE PROGRAM

TA 50

Barbara Hoditschek
RCRA Permits Program Manager
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
P. O. Box 26110
1190 St. Francis Drive
Santa Fe, NM 87502

RE: Closure Certification Report for the TA-50 Batch Waste Treatment Unit

Dear Ms. Hoditschek:

The purpose of this letter is to transmit the closure certification report for the Technical Area 50 (TA-50), Batch Waste Treatment Unit (BWTU) closure. Closure of the BWTU was conducted in accordance with the closure plan approved by the New Mexico Environment Department. The report details the closure activities, presents the sampling and analysis results, and contains the independent professional engineering certification.

Should you have any questions, feel free to contact Court Fesmire of my staff at (505) 665-4718.

Sincerely,

Joseph C. Vozella
Acting Assistant Area Manager
Office of Environment and Projects

LAAMEP:2JV-006

Enclosure

cc:
See page 2

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SEP - 1 1994

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RPF, LANL, MS-M707

CERTIFICATION

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

Closure Certification Report for TA-50 Batch Waste Treatment Unit

Name: _____ Date: 8/31/94

Dennis Erickson
Division Director
Los Alamos National Laboratory

Name: _____ Date: 8/31/94

Joseph Vozella, Chief
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

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Closure Certification Report for TA-50 Batch Waste Treatment Unit

Name: _____ Date: 8/31/94

Dennis Erickson
Division Director
Los Alamos National Laboratory

Name: _____ Date: 8/31/94

Joseph Vozella, Chief
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

CLOSURE CERTIFICATION REPORT

TA-50 BATCH WASTE TREATMENT UNIT

Facility ID No.:	NM0890010515
Facility Name:	Los Alamos National Laboratory
Legal Owner:	United States Department of Energy
Legal Operator:	University of California
Address:	Los Alamos Area Office
City, State:	Los Alamos, New Mexico 87544
Contact Person:	Mr. Joseph C. Vozella, Acting Chief
Phone:	(505) 665-5027
Date:	August 1994

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Executive Summary

This report summarizes the actions performed in order to meet facility closure requirements for the Batch Waste Treatment Unit located in Building 1 at Technical Area (TA) 50, Los Alamos National Laboratory. These actions include the internal and external decontamination and disassembly of the unit and all associated piping and the decontamination of the waste handling hood and the bermed concrete floor upon which the unit rested. Decontamination of the Batch Waste Treatment Unit consisted of the following seven steps, each of which was accompanied by sampling and analysis to verify decontamination:

1. First Internal Alconox Solution Recirculation, 2-3-94 through 2-7-94
2. Second Internal Alconox Solution Recirculation, 2-8-94
3. Internal Rinse, 5-6-94
4. External Rinse, 4-5-94 and 5-11-94
5. Final Internal Rinse, 5-24-94
6. Vessel and Piping Rinses, 6-23-94 through 6-29-94 and
7. Floor and Hood Wash, 7-21-94.

For each of the above listed steps, samples were taken of the unused rinse solutions (Alconox® and water or just water) prior to use in order to provide background concentrations. After each step additional samples of the used rinse solutions were taken. Analytical results of those additional samples were then compared with those of the background samples to verify that decontamination had been achieved.

Closure activities and decontamination verification were completed August 1, 1994, in accordance with the approved closure plan schedule. All liquids generated during closure were discharged to the TA-50 radioactive liquid waste treatment plant after it was determined that the solutions met TA-50's Waste Acceptance Criteria. All solid wastes generated during closure were placed in a Resource Conservation and Recovery Act (RCRA) less-than-90-day storage area and are currently awaiting approval for transport to TA-54, LANL's RCRA permitted and interim status storage areas, for storage prior to off-site disposal at a RCRA-permitted facility.

1.0 Introduction

The historical information on the Batch Waste Treatment Unit (BWTU) contained in this report was obtained from a Los Alamos National Laboratory (LANL) memorandum *Historical Data on Chemical Batch Waste Treatment Facility* (see Appendix A).

1.1 Purpose

LANL currently operates under a hazardous waste permit granted by the New Mexico Environment Department (NMED) under the Resource Conservation and Recovery Act (RCRA) for the operation of the BWTU located in Building 1 of Technical Area (TA) 50 (see Figures 1 and 2). Facility closure required by HWMR-5, as amended 1989, Pt. V, 40 CFR Section 264.111, was performed on the BWTU in accordance with the Closure Plan Permit Attachment E.2 NM0890010515-1 (Appendix B). Closure was performed in order to make the BWTU available for skid-mounted treatment of mixed wastes (including plating waste, acids, and bases) and to ensure that the unit conforms to the Federal Facility Compliance Agreement. The skid-mounted unit will be included in a RCRA permit application for treatment of mixed waste at LANL. The purpose of this report is to demonstrate that clean closure of the BWTU was achieved through compliance with the approved closure plan. In addition, this report contains the results of the sampling and analysis performed during closure activities as well as the independent professional engineering certification as required by 40 CFR Part 264.115.

1.2 Report Organization

Chapter 1.0 presents the purpose of the report and a facility description. Chapter 2.0 includes the closure activities, results of the sampling and analysis, documentation for the disposal of the wastes, any variances from the approved closure plan, and location of the file of supporting documentation. Chapter 3.0 presents the certification of accuracy of this report, and the independent professional engineering certification. Appendix A contains the LANL memorandum entitled "Historical Data on Chemical Batch Waste Treatment Facility". Appendix B contains the approved closure plan. Appendix C contains the health and safety plan for observation of this closure. Appendix D contains analytical laboratory reports for all samples collected during closure. These reports are separated into attachments that correspond to the individual decontamination steps.

1.3 Facility Description

The BWTU system consisted of a 500-gallon (gal) pressure vessel equipped with a filtering system, condenser, vacuum transfer lines, a transfer pump, and associated transfer lines. The

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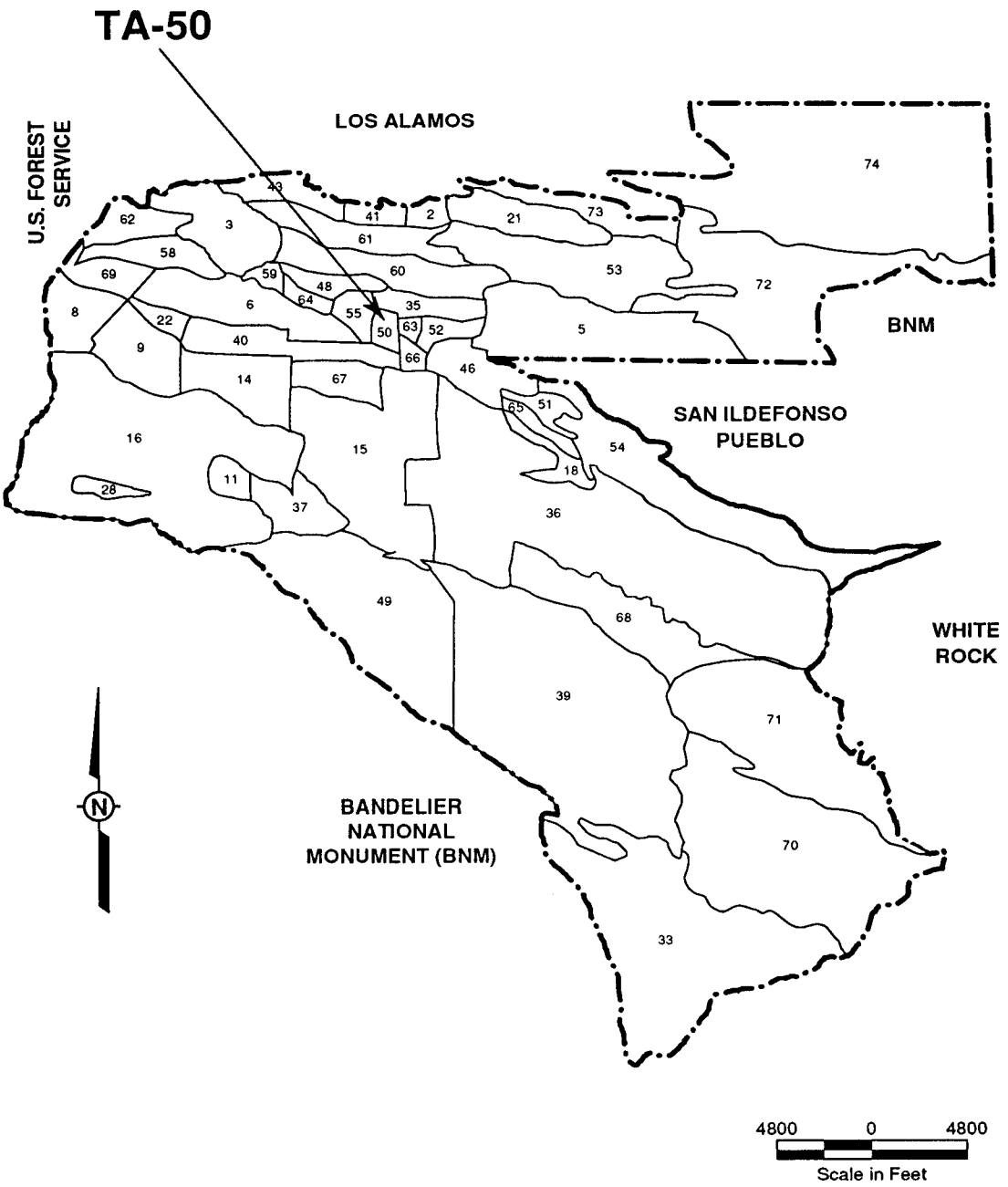

Figure 1
Location Map of Los Alamos National Laboratory Technical Areas

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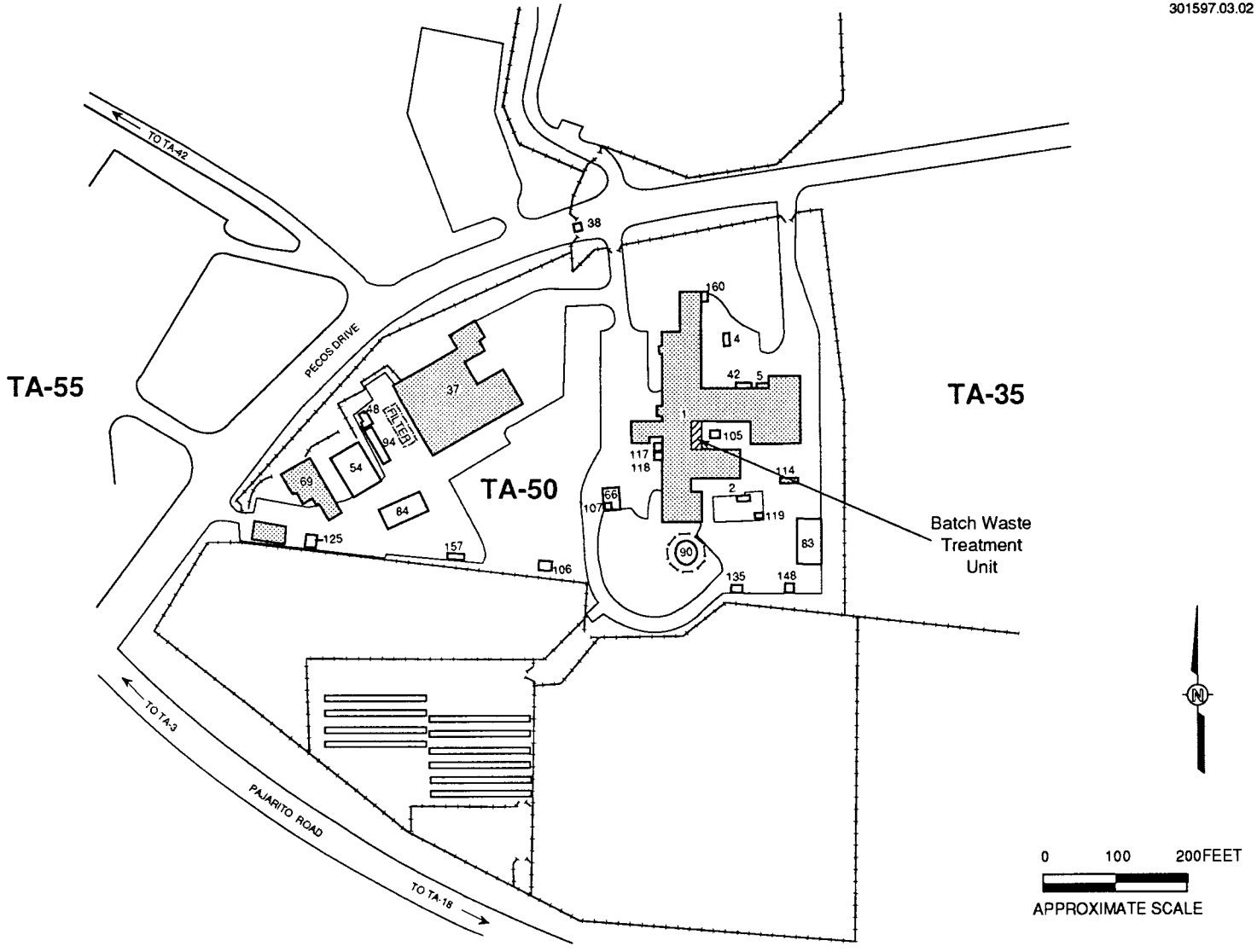

Figure 2
TA-50 - Site Location Plan

system was designed to be totally enclosed or vented depending upon the application. Total system washdown between batches allowed for treatment of incompatible wastes in the unit. The batch treatment equipment was mounted on a crack-free concrete floor that was curbed to contain the contents of the process equipment in case of a leak.

Three waste streams composed the bulk of the waste treated in the BWTU. These streams consisted of an acid/base waste containing copper, a chromate plating waste, and waste cyanide plating solutions. Treatment included neutralization of acids and bases, decomposition of cyanides, and precipitation of metals.

1.4 System Operation

The BWTU System was thoroughly rinsed out after each new batch of waste was processed. Upon completion of each treatment, the resulting solution was filtered, and the filtrate was sampled. If the sample results met the waste acceptance criteria (WAC) for the industrial wastewater treatment plant at TA-50, the filtrate was then discharged to the effluent tank/headworks at the treatment plant. If it did not meet TA-50's WAC, it was sent to TA-54, Area L, for disposal as hazardous waste. The effluent from the industrial wastewater treatment plant is discharged under a National Pollutant Discharge Elimination System permit and, must therefore, meet state and federal discharge limits.

Plugged bag filters, metal sulfides and hydroxides recovered in the bag filters, as well as decant solutions from precipitation treatments, were taken to TA-54, Area L, for storage, sampling/analysis, and off-site disposal at a permitted facility.

1.5 Description of Waste Handled

An initial charge of water was placed into the BWTU on May 7, 1987, to test the equipment for leaks or other problems, to calibrate the level indicator, and to train operations personnel. The waste materials introduced into the BWTU after the initial charge of water consisted of the following (analytical data from Group 9 of the Chemical Sciences and Technology Division [CST-9] sample analysis reports, which detail the contents of the Tuff Tanks and drums prior to treatment in the BWTU [see Appendix A]):

- A test solution of 900 grams of copper dissolved in concentrated nitric acid. Treatment included neutralization and sulfide precipitation of the copper.

- The contents of Tuff Tank #9. Treatment involved removing copper and lead by sulfide precipitation and pH adjustments to bring it to a pH of 6-9.

- The contents of Tuff Tank #7. Treatment involved removing copper and lead by sulfide precipitation.

- The contents of drums #2613 and #1687. Treatment consisted of neutralizing acids with concentrated (50 percent) sodium hydroxide.

- The contents of Tuff Tank #14. Treatment included pH adjustments and ferrous hydroxide precipitation to remove selenium.

- The contents of Tuff Tank #25. These were placed into the BWTU, but no treatments were performed because it was discovered that the selenium content was not high enough to be considered hazardous. Subsequently, this waste was simply transferred over into the main plant after elementary neutralization was carried out.

On June 9, 1989, the BWTU was rinsed four times with water until the pH and oxidation-reduction potential remained constant. This was the last batch of waste processed through the BWTU, but the unit was kept in an operational status until closure.

2.0 Performance of Closure

2.1 Closure Activities

In a letter dated January 3, 1994, NMED acknowledged the closure notification of the BWTU. In this letter, NMED agreed that the closure constituted a Class I permit modification. Class I modifications are reserved for small editorial-type changes that do not affect the plans or procedures detailed in the closure plan. Therefore, LANL interpreted the letter to mean that closure of the BWTU could begin, and on February 3, 1994, LANL began closure activities. Closure activities were completed on August 1, 1994.

Prior to the sampling and analysis steps detailed below, the BWTU was washed down using the facility's Washdown System, and the bag filter was replaced.

Step 1, First Internal Alconox® Solution Recirculation, 2-3-94 through 2-7-94.

Approximately 30 gal of water and 2 1/2 pounds of Alconox® were mixed into a solution and four background samples (BWTU-1-1-CS, BWTU-1-2-CS, BWTU-1-3-CS, and BWTU-1-4-CS) were taken of this "clean" solution. Because of the excessive foaming of the solution, only 20 gal were introduced into the BWTU, with an additional 10 gal of water. The solution was

circulated through the unit (the vessel, pump, and associated piping) for approximately two hours. It was then transferred into drums, and samples (BWTU-1-1-DS, BWTU-1-2-DS, BWTU-1-3-DS, and BWTU-1-4-DS) of the used wash solution were taken. (See Section 2.1.1 for sampling and analysis procedures, and see Appendix D, Attachment 1, for the analytical laboratory results.)

Step 2, Second Internal Alconox® Solution Recirculation, 2-8-94.

A second solution of water and Alconox® was prepared at half the concentration of the Alconox® used in the first solution. The bag filter was replaced and samples (BWTU-2-1-CS, BWTU-2-2-CS, BWTU-2-3-CS, and BWTU-2-4-CS) were taken of the clean wash solution. The solution was then circulated through the unit for approximately two hours, after which it was transferred into drums, and samples (BWTU-2-1-DS, BWTU-2-2-DS, BWTU-2-3-DS, and BWTU-2-4-DS) of the used wash solution were taken. (See Appendix D, Attachment 1, for the analytical laboratory results.)

Step 3, Internal Rinse, 5-6-94.

Analytical results from the Step 1 and Step 2 samples were determined to be invalid because of interference from the Alconox® in the analyses. The bag filter was removed and the unit then underwent three warm water rinses to remove the final traces of Alconox® from the system. A new bag filter was placed into the BWTU, and samples (BWTU-3-1-CS, BWTU-3-2-CS, BWTU-3-3-CS, and BWTU-3-4-CS) were taken from a barrel of clean tap water. This water was then transferred to the BWTU and recirculated through the system. The BWTU was then drained into a 55-gal barrel, and samples (BWTU-3-1-DS, BWTU-3-2-DS, BWTU-3-3-DS, and BWTU-3-4-DS) of the used rinse water were taken. (See Appendix D, Attachment 2, for the analytical laboratory results.)

Step 4, External Rinse, 5-11-94.

Three buckets of an Alconox® and water solution were prepared. Samples (BWTU-4-1-CS, BWTU-4-2-CS, BWTU-4-3-CS, and BWTU-4-4-CS) were taken of the clean rinse water. The exterior of the BWTU and the surrounding pipes were then scrubbed with the solution. The washdown entailed scrubbing the BWTU and piping with rags and rinsing the rags in the buckets of solution. No wash water was released to the curbed containment area. Used rags were placed in plastic bags. After the final exterior rinse, samples (BWTU-4-1-DS, BWTU-4-2-DS, BWTU-4-3-DS, and BWTU-4-4-DS) of the used rinse water were taken. (See Appendix D, Attachment 3, for the analytical laboratory results.)

Step 5, Final Internal Rinse, 5-24-94.

Because mercury had been detected in the previous rinse samples (Step 3), it was determined that additional internal rinses were needed. Therefore, a sample of the clean rinse water (BWTU-5-4-CS) was taken, and the BWTU was rinsed four times. The bag filter was replaced before the first and final rinses. A sample of the final rinse water (BWTU-5-4-DS) was collected and submitted to CST-9 for mercury analysis only. (See Appendix D, Attachment 4, for the analytical laboratory results.)

Step 6, Vessel and Piping Rinses, 6-23-94 through 6-29-94.

Because mercury was detected again in the final internal rinse sample (Step 5), NMED approved disassembly of the BWTU and piping with the condition that the piping ends be cleaned and that the piping and vessel be rinsed, regardless of the presence of any dried residue in the system for which the closure plan required sampling. To demonstrate decontamination, this rinse water would be sampled and analyzed for mercury content. Thus, the BWTU and associated piping was disassembled and inspected for residues. Because none were found, decontamination proceeded and a sample of clean tap water (BWTU-6-CSB) was taken. The ends of the pipes were cleaned, the piping was rinsed with water into a drum, and a sample was taken of the final rinse water (BWTU-6-DSP). The BWTU vessel was also rinsed with water, and a sample of the final rinse water (BWTU-6-DSR) was collected. (See Appendix D, Attachment 5, for the analytical laboratory results.)

Step 7, Floor and Hood Wash, 7-21-94.

The piping was removed before the washdown of the curbed containment area began. Remaining parts of the vessel and platform were not removed, but they did not hinder the washdown process. A solution of warm water and Alconox® was prepared, and samples were collected of the clean solution (BWTU-7-2-CS, BWTU-7-3-CS). This solution was then used to rinse the curbed containment area and to wipe down the waste handling hood. The used solution was collected in a drum, and samples (BWTU-7-2-DS, BWTU-7-3-DS) were taken. (See Appendix D, Attachment 6, for the analytical laboratory results.)

2.2 Sampling and Analysis Procedures.

For each sampling event, samples of clean rinse solution were taken prior to decontamination activities to provide the most accurate background results for each individual step. All samples were placed in containers appropriate for each analysis. The bottles were sealed and tagged, and the samples were preserved as required. Chain of Custody forms accompanied each set of samples. All sampling was conducted in accordance with the NMED approved closure plan.

Analyses were conducted in accordance with procedures given in Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846 (SW-846). Analyses were conducted at Kemron, a contract laboratory for LANL, and at LANL CST-9. Samples from Steps 3 and 4 were analyzed for the parameters listed in Table 2-1. Samples from Steps 5 and 6 were analyzed for mercury content only (see Section 2.4). Samples from Step 7 were analyzed for organics only, as required by Table E.2.3 in the NMED approved closure plan.

Table 2-1

Analytical Parameters

METALS	ORGANICS	OTHER
Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver Nickel Beryllium	Halogenated volatile organics Nonhalogenated volatile organics Acid-extractable semivolatile organics Base-neutral extractable semivolatile organics	Cyanides pH

2.3 Results

2.3.1 Decontamination Verification

Table 2-2 summarizes the analytical results for samples from Steps 3 through 7. Appendix D contains the analytical laboratory reports for these sampling events. Table 2-2 does not include samples results for Steps 1 and 2 because the results were determined to be invalid because of interference from high concentrations of Alconox®. For completeness, Appendix D, Attachment 1, includes the analytical results for Steps 1 and 2.

The NMED approved closure plan defines successful decontamination as:

- Having no detectable constituents in the final sample or
- Having detectable hazardous constituents in the final sample that, at the 0.01 confidence level, are equal to or less than their concentration in the unused washwater or background sample.

Because there were chemical constituents detected in the unused washwater, the second constraint was used to demonstrate successful decontamination. LANL interprets the 0.01 confidence level to mean 99% confidence level. Decontamination was determined to have been achieved when levels of detected chemical constituents in the final samples were equal to or below the levels of detected constituents in the background samples, taking into account the uncertainties of the analytical measurements.

Mercury was a recurring contaminant in the internal rinse samples, despite the thoroughness of the internal rinsing. Thus, it was decided by NMED and LANL that, in order to resolve this problem, when the BWTU was disassembled, the ends of the pipes would be cleaned, regardless of whether any residue was found; the pipes and other equipment would be rinsed several times; and the rinsate would be sampled and analyzed for mercury content. The analytical results (see Table 2-2 and Appendix D, Attachment 5) show that the levels of mercury in the used rinse water were below the levels of mercury in the unused rinse water. Therefore, the BWTU vessel and associated piping is considered to be successfully decontaminated.

Lead was detected above the background level in Step 4. Section 2.4 discusses this finding as a variance from the NMED approved closure plan.

Table 2-2

Summary of Analytical Results

Step 3—Internal Rinse

Type of Analysis (Analytical Laboratory)	Sample Number	SW-846 Method	Detected[1] Constituents	Concentration (ppb)
Cyanide (Kemron)	BWTU-3-1 Clean Sample (CS) BWTU-3-1 Dirty Sample (DS)	945 945	None None	
Metals (Kemron)	BWTU-3-4-CS	6010 7470 7421	Barium Mercury[2] Lead	30 ± 3 <0.2 26 ± 2.6
	BWTU-3-4-DS	6010 7470 7421	Barium Mercury Lead	30 ± 3 3.6 ± 0.36[3] 11 ± 1.1

Refer to footnotes at end of table.

Table 2-2, (Continued)

Summary of Analytical Results

Type of Analysis (Analytical Laboratory)	Sample Number	SW-846 Method	Detected[1] Constituents	Concentration (ppb)
Volatile Organic Compounds (VOC) (Kemron)	BWTU-3-3-CS BWTU-3-3-DS	8260 8260	None None	
Semivolatile Organic Compounds (SVOC) (Kemron)	BWTU-3-2-CS BWTU-3-2-DS	8270 8270	Bis(2-ethylhexyl)phthalate[2] Phenol[2] Bis(2-ethylhexyl)phthalate Phenol	<10 <10 18 ± 5.4[4] 18 ± 5.4[4]
pH[5] (CST-9)	BWTU-3-1-CS BWTU-3-1-DS		-- --	7.94 8.31

Step 4—External Rinse

Type of Analysis (Analytical Laboratory)	Sample Number	SW-846 Method	Detected[1] Constituents	Concentration (ppb)
Cyanide (Kemron)	BWTU-4-1-CS BWTU-4-1-DS	945 945	None None	
Metals (Kemron)	BWTU-4-4-CS	6010 7421 7740	Barium Lead Selenium	30 ± 3 7 ± 0.7 6 ± 0.6
	BWTU-4-4-DS	6010 7421	Barium Lead Selenium[2]	30 ± 3 10 ± 1 <4
VOC (Kemron)	BWTU-4-3-CS BWTU-4-3-DS	8260 8260	Acetone Acetone	29 ± 8.7 36 ± 10.8[6]
SVOC (Kemron)	BWTU-4-2-CS BWTU-4-2-DS	8270 8270	None None	
pH (CST-9)	BWTU-4-1-CS BWTU-4-1-DS		-- --	8.04[5] 8.00[5]

Refer to footnotes at end of table.

Table 2-2, (Continued)

Summary of Analytical Results

Step 5—Final Internal Rinse

Type of Analysis (Analytical Laboratory)	Sample Number	SW-846 Method	Detected[1] Constituents	Concentration (ppb)
Mercury (CST-9)	BWTU-5-4-CS BWTU-5-4-DS	7470 7470	Mercury[2] Mercury	<0.2 12 ± 1[3]

Step 6—Piping and Vessel Rinses

Type of Analysis (Analytical Laboratory)	Sample Number	SW-846 Method	Detected[1] Constituents	Concentration (ppb)
Mercury (Kemron)	BWTU-6-4-DSP BWTU-6-4-DSR BWTU-6-CSB	7470 7470 7470	Mercury Mercury Mercury	0.9 ± 0.09 0.6 ± 0.06 0.9 ± 0.09

Step 7—Floor and Hood Wash

Type of Analysis (Analytical Laboratory)	Sample Number	SW-846 Method	Detected[1] Constituents	Concentration (ppb)
VOC (Kemron)	BWTU-7-3-CS BWTU-7-3-DS	8260 8260	None None	
SVOC (Kemron)	BWTU-7-2-CS BWTU-7-2-DS	8270 8270	None None	

[1] An entry of "none" in this column indicates no constituents were detected over quantitation limits. See Appendix D for the quantitation limits reported by the analytical laboratory.

[2] Although these analytes were not detected, they are included here with the corresponding detection limits for comparison to detected analytes in samples from the same step.

[3] The mercury detected in this sample was addressed through disassembly and rinsing of the vessel and piping followed by additional sampling for mercury per NMED. See Section 2.4.

[4] These detected constituents are discussed in Section 2.4.

[5] The pH results are reported here in the proper units (not in ppb).

[6] Taking into account the uncertainties in the values obtained by the analytical laboratory, these levels fall within the clean sample background concentrations.

2.3.2 Statement of Quality Assurance/Quality Control Adequacy

Laboratory quality control (QC) samples were analyzed concurrently with the rinsate samples to measure and control the accuracy of the analytical data. QC samples include:

- internal calibration standards to measure analytical bias and precision
- method blanks to detect laboratory contamination and
- surrogate spikes for organic compounds analyzed by gas chromatography/mass spectrometry to measure the matrix effect on the analytical process.

Measures of analytical bias and precision in the laboratory control samples were within established laboratory control limits for all parameters. Surrogate spike compound recoveries were generally within EPA method control limits for the organic compound analyses. No analytes of concern were detected in the method blank. Based on review of the QC data, the laboratory is judged to have been in control during all sample analyses, and thus, the data should be viewed as valid and usable.

2.4 Documentation of the Disposal of Wastes Generated During Closure

A total of approximately 200 gal of liquid was generated from washes during closure activities. Following sampling and analysis of these solutions, it was determined that they met TA-50's WAC, and therefore, were discharged to the TA-50 radioactive liquid waste treatment plant.

Solid wastes (rags, filters, gaskets, Tyvek coveralls, gloves, etc.) generated during closure activities were packaged and placed in a RCRA less-than-90-day storage area. Waste profile forms have been submitted to ESH-8 and, at the time of this submittal, are currently awaiting a determination of whether the wastes are hazardous. Following the determination, wastes will be transported to TA-54, Area L, for storage, where they will await off-site disposal at a RCRA permitted disposal facility, if necessary.

2.5 Variances from Approved Closure Plan

The closure of the BWTU was conducted substantially in accordance with the approved closure plan, except for the following variances.

- A variance occurred when disassembly of the BWTU proceeded prior to verification of internal decontamination. The initial interior rinses were found to contain trace amounts of mercury (Step 3). A final interior rinse was conducted after exterior decontamination had been completed (Step 5). This rinsate was also found to

contain trace amounts of mercury. Mercury was known to be present in some of the wastes processed through the BWTU (see Appendix A). Since mercury had not been detected in the exterior rinse samples, it was determined that the teflon gaskets were the most probable source of the mercury detected in the rinsate samples. In a telephone conversation between LANL environmental restoration personnel and NMED, it was concluded that the teflon gaskets in the joints of the piping may have retained mercury and may have been releasing it slowly as the BWTU was rinsed. Therefore, it was agreed that the pipes would be disconnected from the vessel and disassembled. The ends of the pipes would be cleaned and rinsed, and the tank vessel would be rinsed separately. The rinsate from the pipe and from the vessel would each be sampled separately for mercury. NMED suggested that an extension of the closure schedule be requested. LANL closely tracked the progress of the disassembly and rinsing. After review of the analytical results, which confirmed successful decontamination, it was determined that a schedule extension was not necessary. NMED representatives were invited to view the piping disassembly and cleaning.

- Results from semivolatile organic compounds analysis for the Step 3, Internal Rinse/Used Rinse Water sample (BWTU-3-2-DS), indicated that two constituents, bis(2-ethylhexyl)phthalate and phenol, were detected at 18 parts per billion (ppb) with uncertainties of 5.4 ppb. Because these results were not obtained until August 18, a variance occurred when decontamination of the BWTU continued without addressing these constituents. The source of the bis(2-ethylhexyl)phthalate, a plasticizer, is believed to be a new hose that was used to fill the BWTU with water for rinsing prior to sampling the final rinse. The phenol, a fluid used in pump-lubricating oils, was probably introduced into the BWTU when the pump malfunctioned. During repair of the pump, lubricating oils may have been released into the piping system. The very small amounts of these constituents detected (levels just over the detection limit [10 ppb]), are consistent with what would be expected from the sources discussed above. Additionally, the interior of BWTU was rinsed several more times, both before and after disassembly in addressing the mercury contamination. Therefore, based on the above arguments, decontamination is considered to be adequate to protect human health and the environment.

- A variance occurred when the BWTU equipment was not completely removed from the room prior to decontamination of the hood and floor. The size and complexity of the BWTU made it necessary that some parts of the equipment remain in Room 1 during floor and hood decontamination activities, so that the closure of the unit could be completed on schedule. Because the equipment had already been cleaned (see Section 2.1, Steps 1–6), there was no risk of the equipment contributing any contaminants to the floor and hood wash solutions.

- A variance occurred because lead was detected in a used rinse solution at a concentration greater than the lead concentration in the unused or background solution. The results for the used rinse solution in Step 4 indicate a concentration of lead of 10 ppb which is greater than the concentration of 7 ppb in the unused rinse solution, even after taking into account the analytical uncertainties. Table 2-3

contains the results of the sample analyses for lead for Steps 3, Internal Rinse, and 4, External Rinse. The results for Step 3 indicate a concentration of 26 ppb for the unused sample. This is over twice as high as the concentration of 11 ppb detected in the used sample. It is apparent from these data (Table 2-3) that analyses for lead varied greatly. The small difference between the levels in the Step 4 samples becomes negligible as compared with the level in the Step 3 unused sample (26 ppb). Additionally, these levels are well below the maximum contaminant level for lead in liquids of 50 ppb.* Such low levels of lead pose no real risk to human health and the environment.

- Although the tools used in the disassembly of the BWTU were cleaned, a variance occurred because the rinsate was not sampled. However, since the exterior of the BWTU had been cleaned prior to disassembly, the tools never came in contact with any surfaces that could have been contaminated. Therefore, the lack of rinsate sampling posed no real risk to human health and the environment.

Table 2-3

Summary of Lead Concentrations in Rinse Samples

Sample Number	Lead Concentrations (ppb)
BWTU-3-4-CS	26 ± 2.6
BWTU-3-4-DS	11 ± 1.1
BWTU-4-4-CS	7 ± 0.7
BWTU-4-4-DS	10 ± 1

2.6 Location of Supporting Documentation File

As required by the closure plan, a file containing the following information is located at LANL, TA-50, Building 1, Room 101A:

- Field logbook
- Laboratory sample analysis reports
- Quality assurance/quality control documentation
- Chain of Custody records.

Contact Mr. Jerry Freer, 505-667-4301, for information regarding file documentation.

*"Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities," *Federal Register*, Volume 55, No. 145, July 27, 1990 (proposed Subpart S).

3.0 Certifications

3.1 Certification of Accuracy

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that these are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

Closure Certification Report for TA-50 Batch Waste Treatment Unit

Name: _____ Date: _____

Dennis J. Erickson
Division Director

Name: _____ Date: _____

Joseph C. Vozella, Chief
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

3.2 Independent Professional Engineering Certification

This certification was prepared in accordance with generally accepted professional engineering principles and practice pursuant to the requirements of 40 CFR Part 264.115 for an independent professional engineering certification. These services have been performed with the care and skill ordinarily exercised by members of the profession practicing under similar conditions at the same time, and in the same or in a similar locality. We make no other warranty either expressed or implied. The finding and certification are based on (1) reviewing the NMED approved closure plan; (2) various site visits during closure and sampling activities; and (3) a review of the analytical results from each of the sampling events.

With the signature and seal below, I certify that, except for the variances presented in Section 2.4, the closure of the BWTU at LANL TA-50 was conducted substantially in accordance with the NMED approved closure plan, and that the information presented in this report is, to the best of my knowledge and belief, true, accurate, and complete.

Respectfully,

IT Corporation

P. Scott Den-Baars, P.E.
New Mexico Registered Professional Engineer No. 10653
Expires December 31, 1995

Date: August 30, 1994

APPENDIX A

HISTORICAL DATA ON CHEMICAL BATCH WASTE TREATMENT FACILITY

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Alice Barr, EM-8, K490

DATE: March 8, 1993

THRU: Steve Hanson, EM-7
Section Leader

MAIL STOP/TELEPHONE: E518/7-4301

FROM: Robin Reynolds, EM-7
Lori Smith, EM-7

SYMBOL: EM-7LW 93-42

SUBJECT: **Historical Data on Chemical Batch Waste Treatment Facility (CBWTF)**

The Chemical Batch Waste Treatment Facility (CBWTF) is located in Building 1 at Technical Area 50. The system consists of a 500-gallon pressure vessel equipped with a filtering system, condenser, vacuum transfer lines, a transfer pump, and associated transfer lines. The system can be totally enclosed or vented depending upon the application. The batch treatment equipment is mounted on a crack-free concrete floor that is curbed to contain the contents of the process equipment should a leak occur.

As listed in the "Closure Plan Permit Attachment E.2 NM 0890010515-1," the intended wastes to be treated in the Batch Waste Treatment Unit included cyanide, chromate plating solutions, and solutions of acids, bases, and heavy metals. However, due to an inadequate number of operations personnel, and unintentional omission of treatment codes from the RCRA permit, only a very small amount of waste was ever actually introduced into the system.

DESCRIPTION OF WASTE HANDLED:

An initial charge of water was placed into the CBWTF (on May 7, 1987) to test the equipment for leaks or other problems, to calibrate the level indicator, and to train operations personnel. The waste materials introduced into the CBWTF consisted of the following:

1. A test solution of 900g Copper dissolved in concentrated Nitric Acid. Treatment included neutralization and sulfide precipitation of the copper.
2. The contents of Tuff Tank #9. Treatment to remove copper and lead by sulfide precipitation and pH adjustments (pH 6-9).
3. The contents of Tuff Tank #7. Treatment to remove copper and lead by sulfide precipitation.

4. The contents of drums #2613 and #1687. Treatment consisted of neutralization of acids with concentrated (50%) sodium hydroxide.
5. The contents of Tuff Tank #14. Treatment included pH adjustments (pH 6-9) and ferrous hydroxide precipitation to remove selenium.
6. The contents of Tuff Tank #25 was placed into the CBWTF but no treatments were carried out because it was discovered that the selenium content was not high enough to be considered hazardous; so this waste was simply transferred over into the main plant (after elementary neutralization was carried out).

On June 9, 1989, the CBWTF was rinsed four times and recirculated until the pH and ORP remained constant. This was the last waste of any kind handled by the CBWTF.

The system was rinsed out after each new batch of waste was processed. Upon completion of each treatment, the resulting solution was filtered and the filtrate was sampled. If the sample results met discharge requirements, the filtrate was then discharged to the effluent tank/headworks at the industrial wastewater treatment plant (or, if it did not meet the discharge requirements, it was sent to TA-54 Area L for disposal as hazardous waste). The effluent from the industrial wastewater treatment plant is discharged under a NPDES permit and therefore must meet state and federal discharge limits.

Metal sulfides and hydroxides recovered in the filters, as well as decant solutions from precipitation treatments, and plugged bag filters, were taken to TA-54, Area L for storage, sampling analysis and off site disposal at a permitted facility.

The attached analytical data (see Appendix I) from EM-9 sample analysis reports indicates the contents of the Tuff Tanks and drums prior to treatment. Based on this actual analytical data, the attached documentation represents an accurate account of the small amount of waste treated by the CBWTF.

Based on the accuracy of the data collected, EM-7 would like to proceed as soon as possible with the preliminary sampling requirements of a modified closure plan at your discretion. If such preliminary work is possible, we would appreciate a

sampling plan criterion and/or approval via memorandum form for our records. Thank you for your diligence and perseverance on our behalf.

RR/LS:mg

Attachments a/s

Cy: Jack Elvenger, DOE-LAAO, A316
Guy Lussiez, EM-7, E516
Brian Myers, IT, E518
EM-7 Group Office, E517
EM-7 Files, E518

CONTAINER: **Tuff Tank # 9**
WASTE ORIGIN: SM-40
GENERAL CONTENTS: Copper Etchant-overflow from sump containment
CHEMICAL ANALYSIS:

Sample Number	Chemical	Concentration			
87.75398	Ag	0.0140	+/-	0.0030	mg/l
	As	52.0000	+/-	10.0000	ug/l
	Ba	< 0.1000	+/-	0.0000	mg/l
	Cd	0.3500	+/-	0.0800	mg/l
	Cn	< 0.0100	+/-	0.0000	mg/l
	Cr	53.0000	+/-	10.0000	ug/l
	Cu	0.5200	+/-	0.0500	g/l
	Fe	61.0000	+/-	6.0000	mg/l
	Hg	2.6000	+/-	0.3000	ug/l
	NH3-N	0.6900	+/-	0.0700	g/l
	Pb	0.5400	+/-	0.1000	g/l
	Se	< 1.0000	+/-	1.0000	ug/l
	pH	4.4300	+/-	0.1000	

CONTAINER: **Tuff Tank #7**
WASTE ORIGIN: SM-40
GENERAL CONTENTS: Copper Etchant
CHEMICAL ANALYSIS:

Sample Number	Chemical	Concentration			
87.75396	Ag	0.2000	+/-	0.0200	mg/l
	As	12.0000	+/-	2.0000	mg/l
	Ba	< 0.1000	+/-	0.0000	mg/l
	Cd	52.0000	+/-	10.0000	ug/l
	Cn	5.9000	+/-	0.5900	mg/l
	Cr	0.9600	+/-	0.2000	mg/l
	Cu	27.0000	+/-	3.0000	g/l
	Fe	11.0000	+/-	1.0000	mg/l
	Hg	8.5000	+/-	0.9000	ug/l
	NH3-N	27.0000	+/-	2.7000	g/l
	Pb	0.3600	+/-	0.8000	g/l
	Se	< 1.0000	+/-	0.0000	ug/l
	pH	7.3200	+/-	0.1000	

CONTAINER: **Drum # 1687**
WASTE ORIGIN: SM-40
GENERAL CONTENTS: H2SO4 / HCl / Accelerator 19*
CHEMICAL ANALYSIS:

Sample Number	Chemical	Concentration			
87.75114	Ag	0.0030	+/-	0.0030	mg/l
	As	4.3000	+/-	0.8000	mg/l
	Ba	< 0.1000	+/-	0.0000	mg/l
	Cd	0.2400	+/-	0.1000	ug/l
	Cn	0.0000	+/-	0.0000	mg/l
	Cr	18.0000	+/-	4.0000	ug/l
	Cu	6.5000	+/-	0.7000	mg/l
	Fe	0.6300	+/-	0.0600	mg/l
	Hg	6.4000	+/-	0.6000	ug/l
	Ni	0.0560	+/-	0.0400	mg/l
	Pb	0.1400	+/-	0.0400	mg/l
	Se	1.2000	+/-	1.0000	ug/l
	Zn	0.0460	+/-	0.0050	mg/l
	pH	1.6100	+/-	0.2000	
89.10224	Ag	7.0000	+/-	3.0000	ug/l
	As	95.0000	+/-	9.5000	ug/l
	Ba	< 0.1000	+/-	0.0000	mg/l
	Cd	< 20.0000	+/-	0.0000	ug/l
	Cr	3.6000	+/-	0.3600	mg/l
	Cr(+6)	0.2000	+/-	0.0200	mg/l
	Hg	0.1700	+/-	0.0200	mg/l
	Ni	1.3000	+/-	0.1300	mg/l
	Pb	0.7900	+/-	0.0800	mg/l
	Se	< 1.0000	+/-	0.0000	ug/l
	Tl	< 2.0000	+/-	0.0000	ug/l
	pH	< 1.0000	+/-	0.0000	
	Alpha	< 70.0000	+/-	0.0000	pci/l
	Beta	< 120.0000	+/-	0.0000	pci/l
	Gamma	< 13.0000	+/-	0.0000	nci/l

*Accelerator 19 is used in the SM-40 electroplating shop baths and contains 10% flouroboric acid, and 90% water and non-hazardous constituents (See Appendix II).

CONTAINER: **Drum # 2613**
WASTE ORIGIN: SM-40
GENERAL CONTENTS: H2SO4 / HCl
CHEMICAL ANALYSIS:

Sample Number	Chemical	Concentration			
89.10227	Ag	7.0000	+/-	3.0000	ug/l
	As	2.0000	+/-	0.0000	ug/l
	Ba	< 0.1000	+/-	0.0000	mg/l
	Cd	< 20.0000	+/-	0.0000	ug/l
	Cr	2.7500	+/-	0.2800	mg/l
	Cr(+6)	0.9000	+/-	0.9000	mg/l
	Hg	36.0000	+/-	3.6000	ug/l
	Ni	0.9600	+/-	0.1000	mg/l
	Pb	2.5000	+/-	0.2500	mg/l
	Se	< 1.0000	+/-	0.0000	ug/l
	Tl	< 2.0000	+/-	0.0000	ug/l
	pH	< 1.0000	+/-	0.0000	
	Alpha	< 70.0000	+/-	0.0000	pci/l
	Beta	< 120.0000	+/-	0.0000	pci/l
	Gamma	< 13.0000	+/-	0.0000	nci/l

CONTAINER: **Tuff Tank #14**
WASTE ORIGIN: SM-40
GENERAL CONTENTS: Selenium Waste
CHEMICAL ANALYSIS:

Sample Number	Chemical	Concentration		
	Se	approximation:	4.6	mg/l
	Pb	approximation:	<1.0	ug/l

CONTAINER: **Tuff Tank #25**
WASTE ORIGIN: SM-40
GENERAL CONTENTS: Selenium Waste
CHEMICAL ANALYSIS:

Sample Number	Chemical	Concentration			
89.75116	Se	99.0000	+/-	10.0000	ug/l

TA-3 SM-40 ELECTROPLATING SHOP BATHES 03-02-88

BATH	PRINCIPLE COMPONENTS (MSDS)	ANALYSIS OF BATH	DISPOSAL
BEGINNING OF COPPER LINE**********			
1 Cleaner alkaline (1175A)	40% ethanolamine 10% triethanolamine pH 12	none	sewer
2 Rinse for #1			sewer
3 Ammonium persulfate J T Baker	ammonium persulfate	pH .79 Hg 3.2 ppm	drum
4 Rinse for #3			sewer
5 Sulfuric acid J T Baker	20% sulfuric acid	pH -.14 Hg .039 ppm	SUMP
6 Rinse for #5			sewer
7 Hydrochloric acid J T Baker	20% hydrochloric acid	pH -.06 Hg .073 ppm	SUMP
8 Catalyst 9F Shipley Company Inc. Mass.	15% hydrochloric acid 10% stannous chloride <1% palladium 73% water and non-haz pH <2	pH -.49	drum
9 Rinse for #8			sewer
10 Rinse			sewer
11 Accelerator 19 Shipley Co. Inc	10% fluoboric acid 90% water and non-haz pH <1 [As 3.8 ppm]	As 4.3 ppm	SUMP
12 Rinse for #11			sewer
13 Electroless copper alkaline Shipley Co Inc. 617-969-5500	CUPOSIT 328-A 5% formaldehyde <5% copper sulfate 90% water and non-haz pH 6 CUPOSIT 328-C 10% formaldehyde <.5% coppersulfate 90% water and non-haz pH 6.5 CUPOSIT 328-Q 5% sodium hydroxide 95% water and non-haz pH >12 [Hg 45 ppm]	pH 11.5 Hg 1.1 ppm	drum

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Brian Myers DATE: 4/1/87

ORIGIN OF SAMPLE(S) SM-40 Bath 6 As

DATE SAMPLED

Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY	DESCRIPTION: Accelerator 19	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY
Ag	0.003 ± .003 mg/L		222	new	Cl	0.39 ± .1 mg/L		23.2	[illegible]
Hg	6.4 ± .6 ug/L		245.1	[illegible]	Ba	0.0 ± 1.0 mg/L	4/[illegible]	[illegible]	[illegible]
As	4.3 ± .4 mg/L		206.2	"	CN Dip test	neg	4/1	[illegible]	[illegible]
Pb	0.14 ± .03 mg/L		239.2	"	Ph	1.61 ± 0.2	4/1	150.1	[illegible]
Cr total	19 ± 4 ug/L		218.1	"	N.	0.056 ± .04 mg/L		249.1	"
					Cu	6.5 ± .7 mg/L			[illegible]
					Fe	0.63 ± .06 mg/L			"
					Zn	0.046 ± .005 mg/L			"

REMARKS: 87.75114

APPROVED: H. P. DATE: 4/22/87
Chief Chemist

Lab Copy

H7-LAB-35A

APPENDIX B

BATCH WASTE TREATMENT UNIT CLOSURE PLAN

CLOSURE PLAN
PERMIT ATTACHMENT E.2
NM 0890010515-1

E.2. Batch Waste Treatment Unit and Container Storage Area

The Batch Waste Treatment Unit is located in Building 1 at Technical Area 50 (Figure E.2.1). The system consists of a totally enclosed, vented, 500-gallon pressure vessel equipped with a filtering system, condenser, and vacuum transfer lines. Total system washdown between batches allows for the treatment of incompatible wastes in the unit. Wastes treated in the Batch Waste Treatment Unit include cyanide, chromate plating solutions, and solutions of acids, bases and heavy metals. The batch treatment equipment is mounted on a crack-free concrete floor that is curbed to contain the contents of the process equipment should a leak occur.

A waste transfer and packaging area is also housed in the room in which the Batch Waste Treatment Unit is located. This area consists of a small space that is covered with a ventilation hood. Small quantities of waste are repacked within this area, when necessary.

E.2.1. Estimate of Maximum Waste in Storage

The maximum inventory of hazardous wastes in storage or treatment at the Batch Waste Treatment Unit, including drum storage and pipe and vessel inventory, is estimated at 5 cubic meters (1,300 gallons).

E.2.2. Description of Waste Handled

Three waste streams compose the bulk of the waste treated in the Batch Waste Treatment Unit, although the system is flexible enough to allow treatment of other wastes that may be generated through new Laboratory projects. These streams are an acid/base waste that contains copper, chromate plating waste, and waste cyanide plating solutions. Treatment includes neutralization of acids and bases, decomposition of cyanides and precipitation of metals.

Upon completion of treatment, the resulting solution is filtered and the filtered liquid discharged to either the effluent tank/headworks at the industrial wastewater treatment plant or containers for disposal as hazardous waste. The effluent from the industrial wastewater treatment plant is discharged under a NPDES permit. Metal sludges recovered in the filters are taken to TA-54, Area L for storage, sampling, analysis and off site disposal at a permitted facility.

E.2.3. Closure Procedures and Decontamination

E.2.3.1. Partial Closure

No partial closure of this unit is expected to occur. Any decontamination necessary to perform maintenance, with no intention to remove the unit, is not considered partial closure.

E.2.3.2. Final Closure

Wastes in storage at the initiation of closure will be either shipped off site for disposal or treated using the standard operating procedure (SOP) for the waste, and no more waste will be received. Following the treatment of the last waste, the system will be washed down using the facility's washdown system, and the resulting liquid will be discharged to the industrial wastewater sewer in accordance with standard operating procedures. Following washdown, the system filter cartridges will be replaced with new cartridges. The used cartridges will be placed in drums and transferred to TA-54, Area L for storage and sampling, analysis and off site disposal at a permitted facility. The equipment will then be charged with a Liquinox(@) or Alconox(@) solution in water and circulated and flushed for two hours. Following circulation, the solution will be sampled and analyzed for hazardous constituents to verify decontamination, then pumped into drums and transported to TA-54, Area L for shipment off site. If analysis of the solution indicates contamination, a new filter will be installed and additional washings will be conducted until decontamination is verified. Following successful internal decontamination, the filter cartridges will be removed, placed in drums and transported to TA-54, Area L, for sampling, analysis and off site disposal at a permitted facility.

When internal decontamination is complete, the outside of the equipment will be scrubbed and rinsed with a warm solution of Liquinox(@) or Alconox(@) in water. The cleaning solutions will accumulate in the curbed area and will be pumped into drums with a small manually operated drum pump. Samples of this solution will be taken from the drum to verify decontamination. Washdown will be repeated until decontamination is verified. The contained liquid will be transported to TA-54, Area L for sampling, analysis and shipment off site for treatment and/or disposal.

Upon successful external decontamination, the equipment will be disassembled and internally inspected. Any residual matter found will be scraped or brushed off the area where the residue occurred, then washed and rinsed. Dry residues will be placed in approved DOT containers for transport to TA-54, Area L for sampling, analysis and off site disposal at a permitted facility. Liquids from washing and rinsing will be placed in drums and transported to TA-54, Area L for sampling, analysis and off site disposal. Cleaned equipment will be removed from the building and handled as a nonregulated waste.

Following removal of the batch treatment equipment, the floor within the curbed area and the waste handling hood will be washed and rinsed with a warm Liquinox(@) or Alconox(@) solution in water. The wash water will be picked up and put in drums using a drum pump, rags and/or mops, wringing the excess water into a drum. This water will be sampled to demonstrate decontamination. Regulated wastes or residues will be shipped off site for treatment or disposal.

Personnel involved in disassembly and handling of equipment will wear protective equipment, including: acid resistant coveralls, head protection, neoprene-coated gloves, and boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators will be used if specified by the Laboratory's Industrial Hygiene Group, ~~HSE-5~~ HS-5, following a field inspection.

Spills occurring during equipment disassembly will be contained in the curbed area and will be picked up with mops. No decontamination of container handling

equipment is anticipated during closure because the wastes are inside containers and no contact is expected between wastes and handling equipment. If a container is breached, the handling equipment involved will be decontaminated by washing as above. If the spill occurs outside the curbed area, the spilled materials will be absorbed and cleaned as above. The spill area will be included in the final decontamination verification washdown. All spill residues will be handled in accordance with applicable hazardous waste regulations.

Protective clothing, coveralls, face shields, and boots worn during the wash down will be rinsed in clean water while the items are within the curbed area. The rinse water will be handled with the dirty water from the external wash down. Following internal and external decontamination, the equipment will be considered free from regulated wastes. Protective clothing will be worn by personnel disassembling the equipment. The protective clothing and tools used during disassembling will be washed with detergent and water. The wash water will be collected and analyzed. If the wash water is nonhazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on site or transported off site to a permitted disposal facility. Mops and rags used for cleanup will be placed in drums for transport to TA-54, Area L, for sampling, analysis and off site disposal at a permitted facility.

E.2.4. Decontamination Verification

Before the first wash down two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.2.2.

One additional clean solution sample will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.

Dirty washdown solutions will also be analyzed for the constituents listed in Table E.2.2. Analytical procedures will conform to methods found in SW-846. Equipment will be considered to be contaminated if the used wash solutions show a significant increase in the listed constituents over the clean wash solution.

The constituents listed in Table E.2.2. include regulated constituents normally stored and treated in the plant, and additional metals that may have been inadvertently included in treated solutions. A scan for volatile and semivolatile organics ~~is~~ will be performed to ensure that solvents commonly used within the Laboratory have not contaminated the equipment.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or
2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused washwater or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Director will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.2.5. Closure Schedule

The year of closure for the TA-50-1 Batch Waste Treatment Unit is ~~2100~~ 1993. Closure will observe the schedule given in Table E.2.1. The contract for equipment disassembly is expected to exceed $100,000. Because Laboratory policy requires that the work be put out for bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 210 days.

E.2.6. Closure Certification

An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the ~~Director~~ Secretary of ~~NMEID~~ NMED. One copy shall be maintained at the DOE office and one copy maintained by the ~~HSE-8~~ ~~EM-8~~ Regulatory Compliance Section.

E.2.7. Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report. Disposable samplers may be used.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

E.2.7.1. Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material in a container or to determine the leaching rate of the material. Adequate preparation ensures that proper sampling is accomplished. Residues left on the concrete surface will be sampled and analyzed. Drums of solid residues will be sampled with a core sampler or a Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.

E.2.7.1.1. Cleaning of Sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these

samples.

E.2.7.1.2. Sampling Procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the ground/material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or l/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.2.7.2. Liquid Sampling

A Coliwasa sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the Coliwasa is shown in Figure E.2.2, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the Coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.2.7.2.1. Cleaning of Sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the Coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the Coliwasa tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean an protected area.

E.2.7.2.2. Sampling Procedures

- Assemble the Coliwasa sampler.
- Make sure that the Coliwasa sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the Coliwasa sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed

position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.2.7.3. Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.2.3.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.2.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two-page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.2.5.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling),

b. Location of sampling (coordinates referenced to staked field points, if soil sample),

c. Name and address of person making log entry,

d. Type of process producing waste,

e. Number and volume of sample,

f. Description of each sampling location, sampling methodology, equipment used, etc.,

g. Date and time of sample collection,

h. Sample destination and transporter's name (name of laboratory, UPS, etc),

i. Map or photograph of the sampling site, if any,

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc),

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc),

l. Collector's sample identification number(s), and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.2.8. Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.2.9. Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Director. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.2.6.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and nonregulated residues.

G. A certification of accuracy of the report.

TABLE E.2.1.

CLOSURE SCHEDULE

ACTIVITY	MAXIMUM TIME REQUIRED
Notify ~~EID~~ NMED of the closure	-90 Days
Let contract request for proposals	-90 Days
Receive proposals	-30 Days
Select and award Contract	-10 Days
Begin closure activities	Day 0
Treatement of final wastes	Day 30
Internal wash down	Day 40
External wash down	Day 60
Equipment disassembly	Day 130
Floor wash down	Day 140
Final clean up	Day 160
Decontamination verification	Day 180
Submittal of final report to ~~EID~~ NMED	Day 210

NOTE:

The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

TABLE E.2.2.

ANALYTICAL PARAMETERS

METALS	ORGANICS
Arsenic	Halogenated volatile organics
Barium	Nonhalogenated volatile organics
Cadmium	Acid-extractable semivolatile organics
Chromium	Base-neutral extractable semivolatile organics
Lead	
Mercury	
Selenium	
Silver	
Nickel	
Beryllium	

OTHER

Cyanides
pH

NOTE:

Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for ~~Extraction Procedure Toxicity~~ Toxic Characteristic Leaching Procedure (TCLP) shall be analyzed ~~by Extraction Procedure Toxicity procedures~~ using TCLP methods. Both data shall be reported in the final report.

TABLE E.2.3

SAMPLING SUMMARY

MATERIAL SAMPLED	METALS	ORGANICS	OTHER
Internal tank washwater (after)	X	X	X
External tank washwater (before)	X	X	X
External tank washwater (after)	X	X	X
Floor washwater (before)		X	
Floor washwater (after)		X	
Solid wastes & residues	X	X	X

NOTE:

Analytical parameters are given in Table E.2.2.

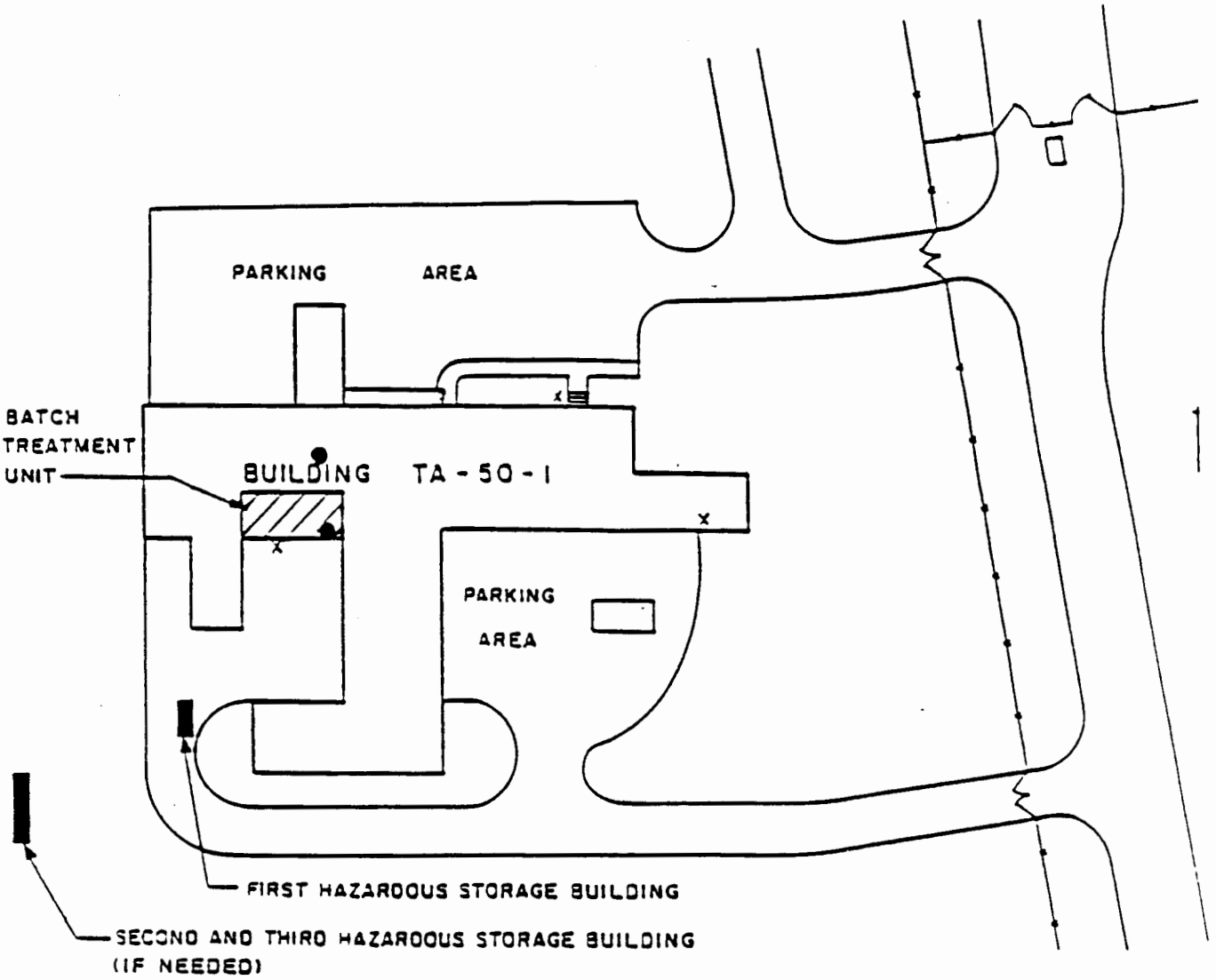

FIGURE E.2-1 BATCH TREATMENT UNIT BUILDING TA-50-1

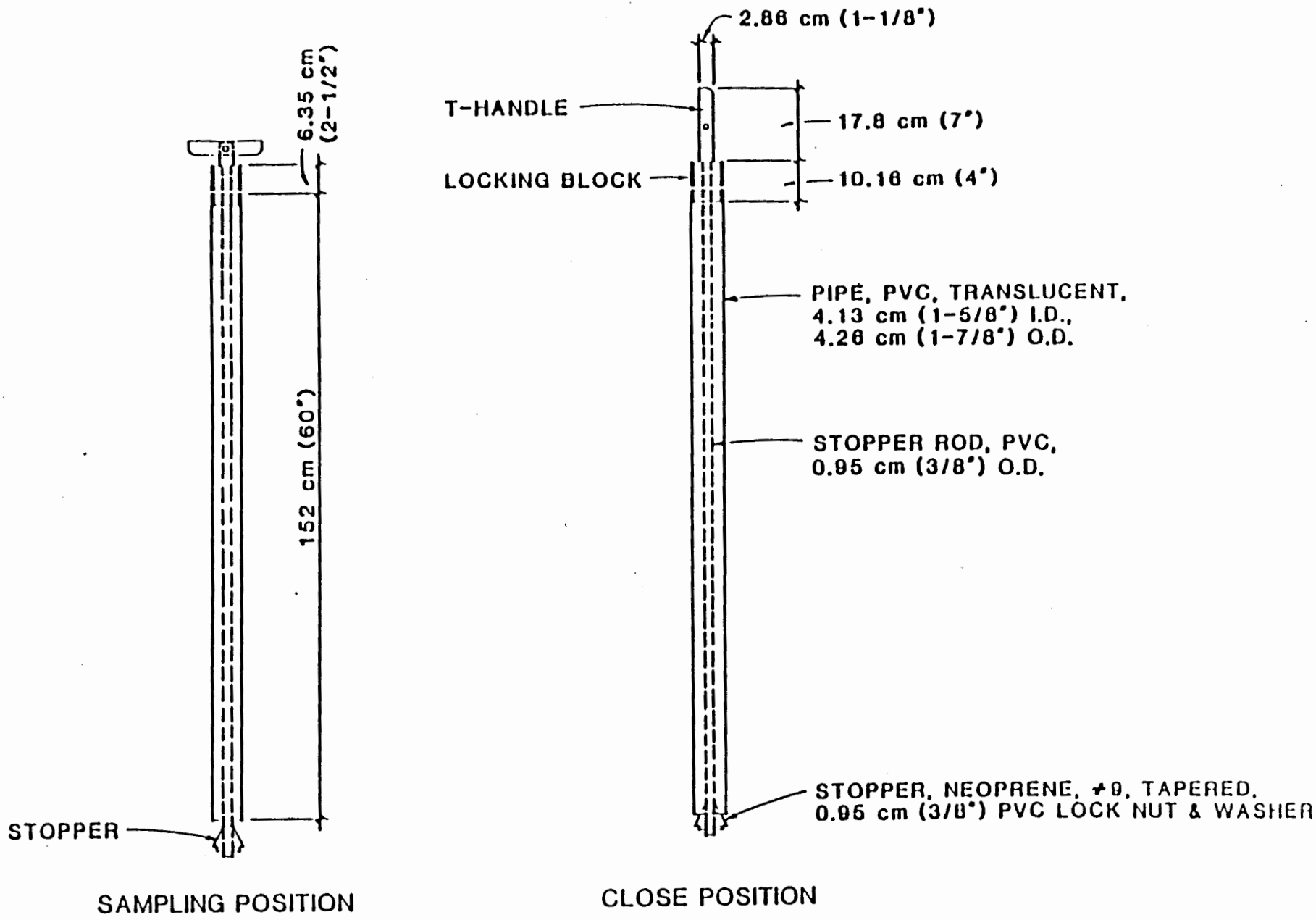

FIGURE E-2.2 - COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

OFFICIAL SAMPLE SEAL

Collected by__ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.2-3 EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

FIGURE E.2-4 EXAMPLE OF SAMPLE LABEL

Hazardous Materials
Collector's Sample No.___

Location of Sampling: __Producer __Hauler
__Disposal Site
__Other:_____

_____

Company's Name _____Telephone (___)_____

Address_____
number street city state zip

Collector's Name_____Telephone (___)_____
signature

Date Sampled_____Time Sampled_____hours

Type of Process Producing Waste_____

Waste Type Code_____Other_____

Field Information_____

_____

_____

Sample Allocation:

1. _____
name of organization

2. _____
name of organization

3. _____
name of organization

Chain of Possession:

1. _____ _____ _____
signature title inclusive dates

2. _____ _____ _____
signature title inclusive dates

3. _____ _____ _____
signature title inclusive dates

FIGURE E.2-5 CHAIN OF CUSTODY RECORD

APPENDIX C

HEALTH AND SAFETY PLAN FOR OBSERVATION OF THE BATCH WASTE TREATMENT UNIT CLOSURE

HEALTH AND SAFETY PLAN

FOR OBSERVATION OF

THE BATCH WASTE TREATMENT UNIT

CLOSURE

Reviews and Approvals

Project Manager
IT Corporation

1/28/94
Date

Health and Safety Representative
IT Corporation

1-28-1994
John (Jack) C. Ellis, CIH
Date

Reviews and Approvals

Author
IT Corporation

_____ 1/28/94
Date

Project Manager
IT Corporation

_____ 1/28/94
Date

Health and Safety Representative
IT Corporation

_____ _____
Date

Site Health and Safety Plan Acknowledgement

I have read, understand and agree to abide by the provisions as detailed in this Site-Specific Health and Safety Plan prepared by IT Corporation. Failure to comply with these provisions may lead to disciplinary action and/or my dismissal from the work site.

Printed Name	Signature	Employee Number	Date
Brian R. Myers	[illegible]	100124	[illegible]
Darren W. Meadows	[illegible]	18597	4/4/94
Jeffrey K. Tucker	[illegible]	13180	6/13/94

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Appendix C - Chemical Exposure Information

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1	PPE Selection Matrix

1.0 Introduction

1.1 Objectives

The objective of this project is to observe closure operations for certification purposes. IT Corporation (IT) provides only observational personnel following task-specified safety procedures.

1.2 Facility and Location Description

The Batch Waste Treatment Unit (BWTU) is located at Technical Area (TA) 50 of Los Alamos National Laboratory (the Laboratory) in room 24. The BWTU was designed to treat aqueous liquid waste for metal contamination, acid/base neutralization, and chemical oxidation.

1.3 Policy Statement

It is the policy of IT to provide a safe and healthful work environment for all its employees. IT considers no phase of operations or administration to be of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts. At IT we believe every accident and every injury is preventable. We will take every reasonable step to reduce the possibility of injury, illness, or accident.

This Health and Safety (H&S) Plan prescribes the procedures that must be followed during the activities at the BWTU. Operational changes which could affect the health or safety of personnel, the community, or the environment will not be made without the prior approval of the IT Project Manager, and the Project H&S Coordinator.

The provisions of this plan are specific to and mandatory for all IT personnel assigned to the project. The Laboratory requires all visitors to the work site to abide by the requirements of the Hazards Orientation for Visitors and Personnel with Escorted and Unescroted Access to TA-50-1 (see Appendix B). All personnel refers only to IT personnel as used within this HASP. Laboratory personnel refers to Los Alamos National Laboratory personnel.

1.4 References

This H&S plan complies with applicable Occupational Safety and Health Administration (OSHA) and the U.S. Environmental Protection Agency (U.S. EPA) regulations. This plan follows the guidelines established in the following:

- Standard Operating Safety Guidelines (U.S. EPA, November 1984)
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (National Institute of Occupational Safety and Health [NIOSH] 86-116)
- Title 29 of the Code of Federal Regulations (CFR), Part 1910.120, U.S. Department of Labor (U.S. DOL)/OSHA.

The contents of this plan are consistent with NIOSH, or supplement the following IT H&S policies and procedures:

- HS001 Safety Policy
- HS002 Safety Policy: International Operations
- HS010 Employee Safety and Health Works Rules
- HS011 Contractor Safety and Health Rules
- HS012 Chemical Hygiene Plan and Safety Manual
- HS013 Health and Safety Procedure Variances
- HS018 Safety Councils
- HS019 Injury and Illness Prevention Program
- HS020 Accident Prevention Program: Reporting, Investigation, and Review
- HS021 Accident Prevention Program: Management Safety Audits and Inspections
- HS022 Accident Prevention Program: Review of New Proposals, Projects, Operations, and Construction
- HS040 Stop Work Authority
- HS041 Embryo-Fetus Protection Program
- HS050 Training Requirements
- HS051 Tailgate Safety Meetings

- HS052 Health and Safety Plans
- HS060 Hazard Communication Program
- HS080 Insurance Claims
- HS090 OSHA Regulatory Inspections
- HS091 Serious Injury and Fatality Reporting Requirements
- HS092 Occupational Injury and Illness Recordkeeping
- HS100 Medical Policies and Procedures
- HS101 Drug and Alcohol Testing
- HS102 Access to Employee Exposure and Medical Records
- HS103 Maintenance of Employee Exposure and Medical Records
- HS104 Employee Notification of Industria Hygiene Monitoring Results
- HS105 Occupational Injuries/Illnesses Procedures
- HS106 First Aid Kits
- HS300 Confined Spaces, Industrial
- HS301 Confined Spaces, Marine
- HS302 Confined Spaces, Leaded Product
- HS303 Hydroblasting
- HS304 Compressed Gas
- HS305 Pressurized Systems
- HS306 Handling Known Compressed Gas Cylinders
- HS307 Excavation and Trenching
- HS308 Scaffolding

- HS309 Underground Storage Tank Removal
- HS310 Hazardous Waste Operations at Uncontrolled Waste Sites
- HS311 Emergency Response Operations
- HS312 Hazardous Waste Operations at TSD Facilities
- HS313 TSD Facilities - Minimum Staffing Requirements
- HS314 Hot Work in Hazardous Locations
- HS315 Control of Hazardous Energy Sources (Lockout/Tagout)
- HS400 Working in Hot Environments
- HS401 Cold Stress
- HS402 Hearing Conservation Program
- HS500 Handling of PCBs
- HS501 Handling of PCBs in the Laboratory
- HS502 PCB Contaminant and Spill Prevention Requirements for Transport Vehicles
- HS503 Handling of Dioxin and Furan Contaminated Materials
- HS504 Handling of Dioxin in the Laboratory
- HS505 Handling of Inorganic Lead, Inorganic Lead Compounds, and Organic Lead Soaps
- HS506 Handling of Inorganic Arsenic
- HS507 Handling of Dibromochloropropane (DBCP)
- HS508 Handling of Beryllium and Beryllium Contaminated Materials
- HS509 Handling, Removal and Disposal of Asbestos and Asbestos Contaminated Materials
- HS510 Asbestos Work in Schools

- HS511 Handling of Benzene and Benzene Contaminated Materials
- HS512 Handling of Blood or Other Potentially Infectious Materials
- HS513 Handling Radioactive Materials
- HS600 Personal Protective Equipment
- HS601 Respiratory Protective Program
- HS602 Eye Protection - Prescription Safety Glasses
- HS603 Maintenance of Survey Equipment
- HS604 Use and Maintenance of Portable Electrical Equipment
- HS605 Electron Capture Detectors
- HS606 Soil Density Gauges
- HS800 Motor Vehicle Operation: General Requirements
- HS810 Commercial Motor Vehicle Operation and Maintenance
- HS820 Forklift Operation
- HS821 Breathing Air Cylinder Trailer
- HS822 Mobil Crane Inspection.

2.0 Responsibilities

2.1 All Personnel

Each person is responsible for the H&S of themselves and their coworkers, for completing tasks in a safe manner, and reporting any unsafe acts or conditions to their Supervisor and/or the Laboratory Site Supervisor. All personnel are responsible for continuous adherence to these H&S procedures during the performance of their work. No person may work in a manner that conflicts with the letter or the intent of, or the safety and environmental precautions expressed in these procedures. After due warnings, IT will dismiss from the site any person who violates safety procedures. IT's employees are subject to progressive discipline and may be terminated for blatant or continued violations. All on-site personnel will be trained in accordance with 29 CFR 1910.120 and this document.

2.2 Project Manager

The Project Manager is ultimately responsible for ensuring that all project activities are completed in accordance with requirements set forth in this plan. The Project Manager is responsible for ensuring all accidents and incidents on the project are reported and thoroughly investigated. The Project Manager must approve in writing any addenda or modifications of the H&S plan.

2.3 Project Health and Safety Coordinator

The Project H&S Coordinator is responsible for the preparation and modification of this H&S plan. Any changes to the H&S plan must be approved by the Project H&S Coordinator. The Project H&S Coordinator will advise the Project Manager on H&S issues. The H&S Coordinator is the designated regulatory contact on matters related to occupational H&S.

2.4 Site Supervisor

The Site Supervisor will be responsible for field implementation of the H&S plan. This will include communicating site requirements to all on-site project personnel (both IT and subcontractor personnel) and consultation with the Project H&S Coordinator. As required by IT Policy and Procedure HS022, the Site Supervisor will be responsible for informing the Project H&S Coordinator and the Project Manager of any changes in the work plan, so that those changes may be properly addressed. Other responsibilities include:

- Enforcing the requirements of the H&S plan.

- Stopping work, as required, to ensure personal safety and protection of property, or where life or property-threatening noncompliance with safety requirements is found.

- Determining and posting routes to capable medical facilities and emergency telephone numbers (including poison control facilities) and arranging emergency transportation to medical facilities.

- Observing on-site project personnel for signs of chemical or physical trauma.

- Ensuring that all site personnel have been given the proper medical clearance, ensuring that all site personnel have met appropriate training requirements and have the appropriate training documentation on site, and monitoring all team members to ensure compliance with the H&S plan.

2.5 On-Site Personnel

All IT personnel are required to read and acknowledge their understanding of this H&S plan. All site project personnel are expected to abide by the requirements of the plan and cooperate with site supervision in ensuring a safe and healthful work site. Site personnel are required to immediately report any of the following to the Laboratory Site Supervisor:

- Accidents and injuries, no matter how minor
- Unexpected or uncontrolled release of chemical substances
- Any symptoms of chemical exposure
- Any unsafe or malfunctioning equipment
- Any changes in site conditions which may affect the H&S of project personnel.

3.0 Job Hazard Analysis

3.1 Scope of Work

IT personnel will be observing closure operations of the BWTU for certification of that closure. Personnel are limited to observation only in order to assure independence required under the Resource Conservation and Recovery Act (RCRA) Operating Permit.

3.2 Job Hazard Assessment

3.2.1 Physical Hazards

The primary physical hazards for this project are associated with the observation of any closure activity. Physical hazards specific to the BWTU are listed below.

Working Surfaces. The BWTU floor is the working surface for most tasks performed in the closure operations. The surface may become wet from circulating fluid and/or water used to wash it down. Slippery work surfaces can increase the likelihood of back injuries, overexertion injuries, and slips and falls.

Floor Trip Hazards. The BWTU contains several berms that offer potential trip hazards. Tripping increases the likelyhood of sprain type injuries.

In addition to the specific hazards listed above, accidents can occur as a result of inattention to operations as they proceed.

3.2.2 Cold Stress

Cold and/or wet environmental conditions can place workers at risk of a cold-related illness. Hypothermia can occur whenever temperatures are below 45°F, and is most common during wet windy conditions, with temperatures between 40 to 30°F. The principal cause of hypothermia in these conditions is loss of insulating properties of clothing due to moisture, coupled with heat loss due to wind and evaporation of moisture on the skin.

Frostbite, the other illness associated with cold exposure, is the freezing of body tissue, which ranges from superficial freezing of surface skin layers to deep freezing of underlying tissue.

Frostbite will only occur when ambient temperatures are below 32°F. The risk of frostbite increases as the temperature drops and wind speed increases.

IT Procedure HS401 mandates specific clothing and procedural requirements which are required in cold stress situations. This policy is incorporated by reference into this plan.

If personnel must observe any operation outside of the building during the course of the closure, IT procedure HS401 will be followed.

3.3 Toxic and Hazardous Materials

The following materials are known to be or are suspect of being present at this site:

- Residues from aqueous waste treatment operations,
- Acids/bases.

3.3.1 Acids/Bases

Table 1 lists the chemical, physical, and toxicological properties of acid/base residues. The concentration of acid/base residues present in the BWTU is anticipated to be extremely low.

Airborne exposure to acid/base residues during closure operations should be minimal. The potential for dermal exposure to acid/base residues (particularly low boiling point compounds) is unlikely due to observation only.

The potential for airborne exposure during closure operations is minimal and monitoring for toxic conditions will be determined by Laboratory H&S personnel. The potential for dermal contact with acid/base residues is minimal.

3.3.2 Noise

Noise exposure at or above the OSHA action level (85 decibels [dBA]) is unlikely during closure. Exposure to noise levels in excess of 90 DBA, the OSHA permissible exposure limits (PEL) for noise, is unlikely during closure operations. A hearing conservation program is not required for this closure.

Exposure to noise over the OSHA action level can cause temporary impairment of hearing; prolonged and repeated exposure can cause permanent damage to hearing. The risk and severity of hearing loss increases with the intensity and duration of exposure to noise. In addition to damaging hearing, noise can impair voice communication; thereby, increasing the risk of accidents on site.

3.4 Biological Hazards

It is unlikely that biological hazards may be present at the site. These biological hazards may include such things as bees and wasps, spiders, snakes, and vermin such as mice. The presence of these hazards will be determined by Laboratory H&S personnel.

4.0 Safety Program

The following work practices will be observed during all site activities.

4.1 General Practices

- At least one copy of this plan shall be available at the project site, in a location readily available to all personnel.
- Contaminated protective equipment, such as hardhats, safety glasses, boots, etc., shall not be removed from the regulated area until it has been cleaned or properly packaged and labeled.
- Legible and understandable precautionary labels which comply with the hazard communication standard shall be affixed prominently to all containers of contaminated scrap, waste, debris, and clothing.
- Removal of contamination from protective clothing or equipment by blowing, shaking, or any other means that disperse contaminants into the air is prohibited.
- No food or beverages shall be present or consumed in the regulated area.
- No tobacco products shall be present or used in the regulated area.
- Cosmetics shall not be applied within the regulated area.
- Contaminated materials shall be stored in tightly closed containers, in well-ventilated areas.
- Containers shall be moved only with the proper equipment, and shall be secured to prevent dropping or loss of control during transport.
- Emergency equipment shall be located outside storage areas in readily accessible locations that will remain minimally contaminated in an emergency.
- All areas that have been determined as uncontaminated inside the regulated area will be clearly marked as such. No personnel, equipment, etc., shall be in these areas until they have been decontaminated.
- Ensure that no one is required to lift more than 60 pounds.

- All crew personnel on site shall use the buddy system (working in pairs or teams). If protective equipment or noise levels impair communications, then prearranged hand signals shall be used for communication. Visual contact shall be maintained between crew members at all times, and crew members must observe each other for signs of toxic exposure. Indication of adverse effects include, but are not limited to:

  - Changes in complexion and skin coloration
  - Changes in coordination
  - Changes in demeanor
  - Excessive salivation and pupillary response
  - Changes in speech pattern.

  Employees shall inform their partners or fellow team members of nonvisible effects of overexposure to toxic materials. The symptoms of such overexposure may include:

  - Headaches
  - Dizziness
  - Nausea
  - Blurred vision
  - Cramps
  - Irritation of eyes, skin, or respiratory tract.

- Visitors to the site shall abide by the following:

  - All visitors shall be instructed to stay outside the contaminated zone (exclusion and decontamination zones) and remain within the clean zone during the extent of their stay. Visitors shall be cautioned to avoid skin contact with contaminated or suspected contaminated surfaces.

  - Visitors requesting to observe work conducted in the exclusion zone (EZ) must wear all appropriate PPE, prior to entry into that zone. If respiratory protective devices are necessary, visitors who wish to enter the contaminated zone must produce evidence that they have had a complete physical examination, training, and have been fit tested for a respirator within the past 12 months.

  - Visitor inspection of the contaminated area shall be at the discretion of the Laboratory Site Supervisor.

4.2 Heavy Equipment Operations

Prior to the start of site work, the heavy equipment operator will inspect all heavy equipment in the presence of the Laboratory Site Supervisor. The inspection will be documented in the field records. If field operations last longer than one week, the heavy equipment inspection must be repeated on a weekly basis. IT personnel will not operate any heavy equipment and will only observe operators as necessary. If heavy equipment is being operated, hardhats will be worn.

4.3 Cold Stress

Most cold-related worker fatalities have resulted from failure to escape low environmental air temperatures, or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is a fall in the deep core temperature of the body.

Site workers should be protected from exposure to cold so that the deep core temperature does not fall below 36 degrees Celsius (°C). Lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences. To prevent such occurrence, the following measures should be implemented:

- Site workers should be provided with warm clothing, such as mittens, heavy socks, etc., when the air temperature is below 45°F. Protective clothing, such as Tyvek or other disposable coveralls, may be used to shield employees from the wind.

- When the air temperature is below 35°F, clothing for warmth, in addition to chemical protective clothing, will be provided to employees. This should include:

  - Insulated suits, such as whole body thermal underwear
  - Wool socks or polypropylene socks to keep moisture off the feet
  - Insulated gloves
  - Insulated boots
  - Insulated head cover such as hard hat, winter liner, or knit cap
  - Insulated jacket, with wind and water resistant outer layer.

- At air temperatures below 35°F, the following work practices must be implemented:

  - If the clothing of a site worker might become wet on the job site, the outer layer of clothing must be water impermeable.

  - If a site worker's underclothing becomes wet in any way, the worker must change into dry clothing immediately. If the clothing becomes wet from sweating (and

the employee is not uncomfortable), the employee may finish the task at hand prior to changing into dry clothing.

- Site workers must be provided with a warm (65°F or above) break area.

- Hot liquids such as soups or warm, sweet drinks shall be provided in the break area. The intake of coffee and tea should be limited, due to their circulatory and diuretic effects.

- The buddy system shall be practiced at all times on site. Any site worker observed with severe shivering shall leave the work area immediately.

- Site workers should dress in layers, with thinner lighter clothing worn next to the body.

- Site workers should avoid overdressing when going into warm areas or when performing strenuous activities.

4.4 Hearing Conservation

All on-site IT personnel shall wear hearing protection, with a Noise Reduction Rating (NRR) of at least 20, when noise levels exceed 85 dBA. All site personnel who may be exposed to noise shall also receive baseline and annual audiograms and training as to the causes and prevention of hearing loss. Noise monitoring is discussed in Chapter 8.0.

Whenever possible, equipment that does not generate excessive noise levels will be selected for this project. If the use of noisy equipment is unavoidable, wherever possible, barriers, or increased distance will be used to minimize worker exposure to noise.

4.5 Sanitation

4.5.1 Potable Water

The following rules apply for all project field operations:

- An adequate supply of potable water will be provided at each work site.

- Portable containers used to dispense drinking water shall be capable of being tightly closed, and shall be equipped with a tap dispenser. Water shall not be drunk directly from the container.

- Containers used for drinking water shall be clearly marked and not used for any other purpose

- Disposable cups will be supplied; both a sanitary container for unused cups and a receptacle for disposing of used cups shall be provided.

4.5.2 Non-potable Water

Outlets for non-potable water shall be identified to clearly indicate that the water is unsafe and is not to be used for drinking, washing, or cooking purposes. There shall be no cross connection (open or potential) between potable and nonpotable water systems. Non-potable and potable water systems shall be separated so as to minimize confusion and possible cross contamination.

4.5.3 Toilet Facilities

Toilet facilities shall be available for employees as follows:

Number of Employees	Minimum Number of Facilities
20 or fewer	One
More than 20, fewer than 200	One toilet seat and one urinal
More than 200	One toilet seat and one urinal per 40 employees

If permanent toilet facilities are not available (at sites more than 500 feet from a building with an accessible toilet), then a portable chemical toilet(s) will be provided.

4.5.4 Trash Collection

Trash collected from the contamination reduction zone (CRZ) will be separated as routine hazardous waste. Trash collected in the support and break areas will be disposed of as nonhazardous waste. Labeled trash receptacles will be set up in the CRZ and in the support zone.

5.0 Personal Protective Equipment

Based upon the job hazard analysis, it is expected that project personnel will not need extensive protective clothing, and that the on-site work can be completed in Level D protective clothing. If conditions warrant higher levels of protection, site work will be suspended until those conditions can be rectified. Use of higher levels of protection will require the review and signature of the project H&S professional, the Project Manager, the Regional or Divisional H&S Manager, and a Certified Industrial Hygienist (CIH) if the Regional or Divisional H&S Manager is not a CIH.

5.1 Respiratory Protection Program

Respiratory protective equipment is not required for observation of this closure.

5.2 Levels of Protection

5.2.1 Level D

The minimum level of protective equipment to be worn on site during this project (support zone) is:

- Hard hat (when heavy equipment present)
- Safety glasses with sideshields
- Steel-toed boots or shoes
- Long pants and long-sleeved shirt.

Within the decontamination and the contaminated zone, the following protective equipment is required:

- Hard hat (when heavy equipment present)
- Safety glasses with sideshields
- Steel-toed boots (with covers as appropriate)
- Nitrile gloves
- Coated Tyvek coveralls
- Long pants and long-sleeved shirt.

5.3 Using Personal Protective Equipment

All persons entering the EZ shall put on the required PPE in accordance with the requirements of this plan. When leaving the EZ, PPE will be removed in accordance with the procedures listed, in order to minimize the spread of contamination.

5.3.1 Donning Procedures

These procedures are not required for this project.

5.3.2 Doffing Procedures

These procedures are not required for this project.

5.4 Selection Matrix

The level of personal protection selected will be based upon Laboratory H&S personnel requirements for the work environment and an assessment by the Site Supervisor of the potential for skin contact with contaminated materials. The PPE selection matrix is given in Table 2.

6.0 Site Control

6.1 Authorization to Enter

Only personnel who have completed 40 hours of hazardous waste operations as defined under OSHA Regulation 29 CFR 1910.120, have completed their 40-hour training or refresher training within the past 12 months, and have been certified as fit for hazardous waste operations by a physician within the past 12 months shall be allowed within a site area designated as an EZ or CRZ. Personnel without such training may enter the designated support zone. The Site Supervisor will maintain a list of authorized persons. That list will be provided to each IT site representative. Only personnel on the authorized persons list will be allowed within the EZ or CRZ. Site control is the responsibility of Laboratory site personnel.

6.2 Hazard Briefing

No person will be allowed on any IT field sites during site operations without first being given a site hazard briefing. In general, the briefing will consist of a review of the tailgate safety meeting. All persons on the site, including visitors, must sign the site-specific tailgate safety meeting form. IT personnel will attend any Laboratory provided safety briefings.

6.3 Documentation of Certification

A training and medical file will be established for the project and kept on site during all site operations. The 40-hour training, update, and specialty training (first-aid/cardiopulmonary resuscitation [CPR]) certificates, as well as the current annual medical clearance for all project field personnel, will be maintained within that file. All IT and subcontractor personnel must provide their training and medical documentation to the Site Supervisor prior to the start of field work.

6.4 Entry Log

The Laboratory personnel shall maintain the BWTU Entry Log.

6.5 Entry Requirements

In addition to the entry requirements listed above, no personnel will be allowed on any IT field site unless they are wearing the minimum PPE as described in Chapter 5.0. Personnel entering the EZ or CRZ must wear the required PPE for those locations.

7.0 Decontamination

IT personnel will be present for observation purposes only and decontamination procedures are not anticipated.

7.1 Personal Protective Equipment Decontamination

Where and whenever possible, single use, external protective clothing shall be used for work within the EZ or CRZ. This protective clothing shall be disposed of in marked containers. Depending upon subsequent analysis, that protective clothing may require disposal as hazardous waste.

Reusable protective clothing will be rinsed at the site with detergent and water. The rinsate will be collected for possible disposal as hazardous waste.

8.0 Site Monitoring

8.1 Air Monitoring

Air monitoring will be conducted at the discretion of the Laboratory H&S personnel recommendations.

8.2 Noise Monitoring

Noise exposure of site personnel will be monitored based on Laboratory H&S personnel recommendations.

8.3 Safety Review

Safety Reviews will be conducted by Laboratory personnel at their discretion.

8.4 Monitoring Records

The Laboratory will maintain site monitoring records.

8.5 Notification

Within five working days after receipt of monitoring results, the Laboratory will inform employees of any exposure.

9.0 Employee Training

9.1 General

All on-site project personnel shall have completed at least 40 hours of hazardous waste operations-related training, as required by OSHA Regulation 29 CFR 1910.120. All field employees receive a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. Those personnel who completed the 40-hour training more than 12 months prior to the start of the project shall have completed an 8-hour refresher course within the past 12 months. The Laboratory Site Supervisor shall have completed an additional 8 hours of relevant H&S training and shall have a current first-aid/CPR certificate. Subcontractor personnel must meet the above training requirements.

IT provides each employee who completes the required 40 hours of classroom training and 3 days of field experience with a certificate signed by the instructor. A copy of the certificate is maintained in the employee's home business unit training files.

9.1.1 Tailgate Safety Meetings

Prior to the start of the project, all personnel will participate in a tailgate safety meeting. During the tailgate safety meeting, the H&S plan will be discussed. The Laboratory Site Supervisor will ensure that the anticipated site hazards are summarized and explained to all personnel, and that those personnel are aware of the precautions they must take to minimize their exposure to those hazards. Tailgate safety meetings will be held at the start of each work shift. All new employees must attend the meeting and be familiar with this H&S Plan.

Attendance records and meeting notes are maintained with the project files.

9.1.2 Material Safety Data Sheets

The site-specific H&S plan includes Material Safety Data Sheets (MSDS) and occupational health guidelines for chemical substances known to be on site (Appendix A). The H&S plan is maintained on site and is accessible to all site employees. Each employee is required to review and sign the H&S plan before starting work on the site.

9.1.3 Site-Specific Health and Safety Plan

The IT safety department prepares a site-specific H&S plan for each project falling within the scope and application of 29 CFR 1910.120 and IT Procedure HS052. Injury and illness prevention programs are written for all other projects. The Project Manager presents the H&S plan and discusses it with all personnel assigned to the project. All workers and visitors must read and sign the H&S plan acknowledging acceptance of site rules and understanding of site hazards before the start of the site work.

9.2 Site Workers' Basic Course

The following is a list of the topics covered in IT's 40-hour training course:

- General site safety
- Physical hazards (fall protection, noise, heat stress, cold stress)
- Names and titles of key personnel responsible for site H&S
- Safety, health, and other hazards typically present at hazardous waste sites
- Use of PPE
- Work practices by which employees can minimize risks from hazards
- Safe use of engineering controls and equipment on site
- Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards
- Worker right-to-know (Hazard Communication OSHA 1910.1200)
- Routes of exposure to contaminants
- Engineering controls and safe work practices
- Components of the site H&S program
- Decontamination practices for personnel and equipment
- Confined-space entry procedures
- Emergency response plan.

9.3 Supervisors' Course Content

Management and supervisors must receive an additional eight hours of training presented by the IT Training Department that includes:

- General site safety and health programs
- PPE programs
- Air monitoring techniques.

9.4 Site-Specific Training

Site-specific training will be accomplished through a review of this H&S plan and the daily tailgate safety meetings.

9.5 First Aid and Cardiopulmonary Resuscitation

At least one employee current in first aid/CPR will be assigned to the work crew and will be on the site whenever operations are ongoing. First-aid and CPR training courses are offered to all IT employees. Annual refresher training in first aid and CPR is required to maintain the currency of the certificate.

9.6 Instructors

The IT Training Department, headquartered in Irvine, California, teaches the 40-hour hazardous waste operations classes using Certified Environmental Trainers (CET). When training needs exceed the capacity of the training division, IT uses outside institutions. IT is recognized by the U.S. EPA and listed in the Federal Register (53 FR 3982). Only similarly recognized outside training institutions may be used with prior approval of the IT Training Department.

10.0 Medical Surveillance

10.1 Medical Examination

All on-site project personnel shall have completed a comprehensive medical examination within the past 12 months that meets the requirements of OSHA Regulation 29 CFR 1910.120 and IT Procedure HS100 and HS101. The annual medical includes the following elements:

- Medical and occupational history questionnaire
- Physical examination
- Complete blood count, with differential
- Liver enzyme profile
- Chest X-ray, once every three years, for non-asbestos workers
- Pulmonary function test
- Audiogram
- Electrocardiogram for persons older than 35 years of age, or if indicated during the physical examination
- Drug screening
- Visual acuity
- Follow-up examinations, at the discretion of the examining physician or the corporate medical director.

All employee medical records are maintained by the H&S group, within the worker's home profit center. The examining physician provides the employee with a letter summarizing his findings and recommendations. Each employee also has the right to inspect and copy his medical records.

The examining physician provides the employer with a letter confirming the worker's fitness for work and ability to wear a respirator. A copy of this letter for all project workers will be kept on site during all project site work.

10.1.1 Placement Examination

All employees will receive a placement medical examination prior to assignment to field operations.

10.1.2 Annual Examination

Each year, subsequent to the placement examination, all employees and subcontractors must undergo an annual examination, similar in scope to the placement examination. Chest X-rays are taken every third year. The medical and occupational history is updated with each examination.

10.1.3 Exit Examination

IT employees receive an exit examination upon leaving the company if they have not been examined within the previous six months. The exit examination consists of the annual examination without drug screen. The employee's immediate supervisor is to notify the home office H&S Assistant within a reasonable time before the termination to allow for the necessary arrangements.

10.2 First-Aid and Medical Treatment

All persons on site must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the Laboratory Site Supervisor. First aid will be provided by the designated site first aider. Injuries and illnesses requiring medical treatment will be accompanied by an "Authorization for Treatment Form." The employee's supervisor or the Laboratory Site Supervisor will complete the "Supervisor's Employee Injury Report" and conduct an accident investigation as soon as emergency conditions no longer exist and first-aid and/or medical treatment has been ensured. The investigation should follow the Accident/Injury Investigation Report. These two reports must be completed and submitted to the H&S Manager within 24 hours after the incident.

If first-aid treatment is required, first aid kits are kept at the CRZ and in all IT vehicles. If treatment beyond first aid is required, the injured should be transported to the medical facility as shown in Appendix B. If the injured is not ambulatory, or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance/paramedics should be summoned. If there is any doubt as to the injured worker's condition, it is best to let the local paramedic or ambulance service examine and transport the worker.

10.3 Medical Restriction

When a medical care provider identifies a need to restrict work activity, the employee's home office H&S Assistant will communicate the restriction to the employee, their supervisor, and the office H&S professional. The terms of the restriction will be discussed with the employee and this supervisor. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

10.4 Medical Records

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1910.20 and HS103, and shall be kept for 30 years post employment. Employee confidentiality shall be maintained. Employees and their authorized representatives have access to these records through the H&S staff.

11.0 Emergency Procedures

This H&S plan has been developed to allow closure observations to be conducted without adverse impact to the H&S of project personnel, other personnel, and the environment. Supplementary procedures are included in this section to address extraordinary conditions that might occur at the site.

11.1 General

The Laboratory Site Supervisor will establish evacuation routes and assembly areas for each site. All personnel entering the site will be informed of these routes and assembly areas. If the site is large and the evacuation routes not clear, a site plan will be made marking the evacuation routes and will be posted at conspicuous locations.

Each site will be evaluated for the potential for fire, explosion, chemical release, or other catastrophic events. Unusual events, activities, chemicals, and conditions will be reported to the Site Supervisor.

11.2 Emergency Procedures

If an incident occurs, the following procedures will be used:

- The Laboratory Site Supervisor will evaluate the incident and assess the need for assistance
- The Laboratory Site Supervisor will call for outside assistance as needed
- The Laboratory Site Supervisor will act as liaison between outside agencies and on-site personnel
- The Laboratory Site Supervisor will ensure the Project Manager and an H&S representative at the nearest IT office are notified promptly of the incident
- The Laboratory Site Supervisor will take appropriate measures to stabilize the incident scene.

11.3 Safety Signals

Evacuation and fire alarms are designated by Building Safety Plan.

11.4 Medical Emergency

All employee injuries must be promptly reported to the Laboratory Site Supervisor. The Laboratory Site Supervisor will:

- Ensure that the injured employee receives prompt first aid and medical attention
- Ensure that the Project Manager and General Manager are promptly notified of the incident
- Initiate an investigation of the incident.

11.4.1 Chemical Inhalation

Any employee complaining of symptoms of chemical overexposure as described in Chapter 3.0 will be removed from the work area and transported to the designated medical facility for examination and treatment. It is highly unlikely that the chemicals anticipated as being on site, in the concentrations anticipated, would cause situations immediately dangerous to life and health.

11.4.2 Eye Contact

Project personnel who have had contaminants splashed in their eyes or who have experienced eye irritation while in the contaminated zone, shall immediately proceed to the eyewash station, set up in the decontamination zone. Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running water for at least 15 minutes. Arrange prompt transport to the designated medical facility.

11.4.3 Skin Contact

Project personnel who have had skin contact with contaminants will, unless the contact is severe, proceed through the decontamination zone, to the wash-up area. Personnel will remove any contaminated clothing, and then wash the affected area with water for at least 15 minutes. The worker should be transported to the medical facility listed below, if they show any sign of skin reddening, irritation, or if they request a medical examination.

11.4.4 Personal Injury Accident

In the event of a personal injury accident, the Laboratory Site Supervisor will assess the nature and seriousness of the injury. In the case of serious or life-threatening injuries, normal

decontamination procedures may be ignored. Less serious injuries such as strains, sprains, minor cuts, and contusions may only be treated after the employee has been decontaminated.

Following decontamination, an IT project team member qualified in first aid and CPR will administer suitable first aid. The Site Supervisor will then, if necessary, arrange transport to the appropriate medical facility.

11.5 Fire

In the case of a fire on the site, the Laboratory Site Supervisor will assess the situation and direct fire-fighting activities. IT personnel will attempt to extinguish the fire with available extinguishers, if safe to do so. IT will call the local fire department (911) in the event of a fire that IT is unable to safely and immediately extinguish.

11.6 Emergency Information

Prior to the start of the project, contact will be made with local authorities and emergency services to establish communication channel during an event of emergency and to familiarize the project personnel with the communication procedure and services.

11.6.1 Public Agencies

Fire	9-911
Ambulance	9-911
Police 9-911	
Hospital	662-4201

11.6.2 Key Project and IT Personnel

Project Manager	Brian Myers, Los Alamos	662-1200
H&S Coordinator	Jack Ellis, Albuquerque	1-262-8800
Laboratory Site Supervisor	Alan Bond, LANL	667-4301
Nearest IT Office General Manager	Scott Den-Baars, Los Alamos	662-1200

Occupational Physician:

Peter M. Greaney, M.D.
Greaney Medical Group
1103 S. Anaheim Boulevard
Anaheim, CA 92805
(714) 535-8221

David Barnes, M.D.
Environmental Medicine Resources, Inc.
4360 Chamblee Dunwoody Road
Suite 202
Atlanta, GA 30341
(404) 455-0818

Client Contact

Alan Bond
Los Alamos National Laboratory
TA-50-1
(505) 667-4301

Steve Hansen
Los Alamos National Laboratory
TA-50-1
(505) 667-4301

12.0 Summary

A four-page H&S plan summary has been prepared for the project. The summary includes the work plan; site characterization and analysis; PPE; and site monitoring requirements. The summary does not replace the project H&S plan, which must be available on site, and must be read and acknowledged by all site personnel. The summary is only intended to be used as a supplement to the H&S plan.

12.1 Site Work Plan Summary

Project Name: Batch Waste Treatment Unit Closure Certification Date: 1/25/94
Project No: 301597 Prepared by: Brian Myers
Site: Technical Area (TA-50), Room 24, Los Alamos National Laboratory (LANL)

I. Objective: Observe closure operations of the Batch Waste Treatment Unit (BWTU) for certification of closure.

II. Tasks: Observe LANL closure operations of the BWTU.

III. Personnel Requirements: 40 hr OSHA 1910.120 with annual refresher; Medical surveillance.

(Note that all personnel on this site have received the training, informational programs, and medical surveillance as outlined in the H&S plan.)

12.2 Site Characterization and Analysis

Project Name: Batch Waste Treatment Unit Closure Certification Date: 1/25/94
Project No: 301597 Prepared by: Brian Myers
Site: Technical Area (TA-50), Room 24, Los Alamos National Laboratory (LANL)

I. Preliminary Site Evaluation (Prior to Site Entry)

A. Anticipated Hazards:
Physical: Trip hazards from berms, wet surfaces likely.

Chemical: Acid/base residues from neutralization operations, soap solution for cleaning.

Fire: Not anticipated.

B. Employee Protection for Initial Site Entry: Level D.

II. General Site Information

A. Location and Approximate Size of Site:
TA-50-24 Room ~ 20' x 40'

B. Duration of Planned Employee Activity:
One to two weeks of intermittent observation.

C. Site Topography:
Inside building.

D. Site Accessibility (By Road):
Pecos Drive off Pajarito Road

E. Pathways for Hazardous Substance Dispersion:
Air, Liquid.

12.3 Personal Protective Equipment

Project Name: Batch Waste Treatment Unit Closure Certification Date: 1/25/94
Project No: 301597 Prepared by: Brian Myers
Site: Technical Area (TA-50), Room 24, Los Alamos National Laboratory (LANL)

I. Potential Hazards

Physical: Trip hazards, wet surfaces

Chemical: Acid/base residues from neutralization operations, soap solution.

II. Respiratory Protection

Not required. Re-evaluation needed if any respiratory equipment to be used.

III. Protective Clothing

- Long pants and long-sleeved shirt
- Safety glasses with side shields or goggles
- Hard hat (when heavy equipment present)
- Nitrite gloves (when splash threat exists)
- Coated Tyvek coveralls (when splash threat exists)

IV. Other Protection

12.4 Site Monitoring

Project Name: Batch Waste Treatment Unit Closure Certification Date: 1/25/94
Project No: 301597 Prepared by: Brian Myers
Site: Technical Area (TA-50), Room 24, Los Alamos National Laboratory (LANL)

Chemical or Physical Agent	Permissible Exposure Limit	Action Level	Monitoring Equipment	Sampling and Analytical Method	Frequency of Analytical Method
Acids/bases		pH>12 ph<2	Litmus paper		

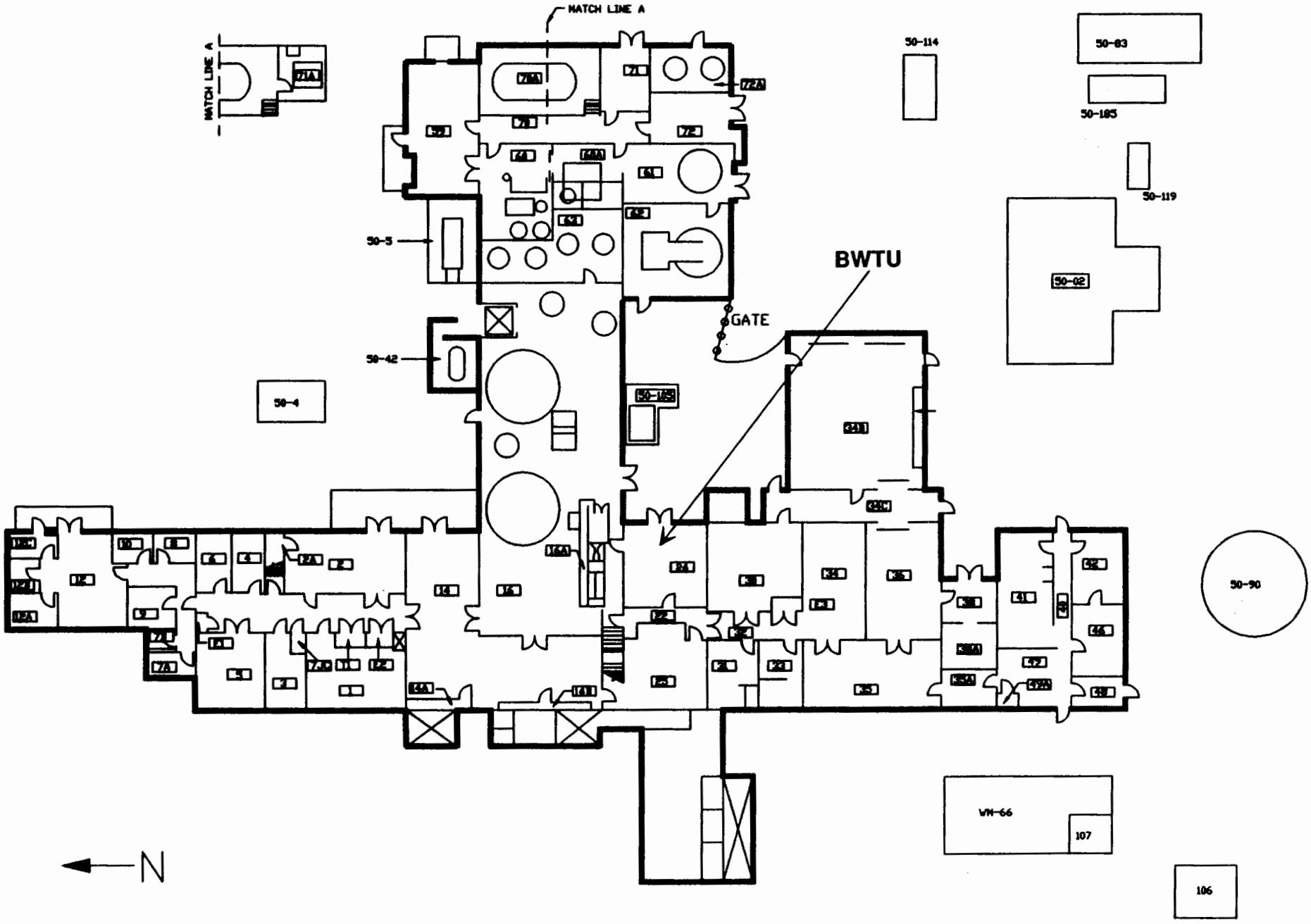
If action level is exceeded, evacuate area and allow contaminant to dissipate. Don appropriate clothing, respirator, and retest. If levels continue, either postpone work until conditions return to background levels or contact the H&S Coordinator for assistance. In the case of noise, exceedance of action levels will trigger the use of hearing protection only.

Interval may be changed based on site-specific hazard information and measurements. Any change must be reviewed with the project H&S Coordinator.

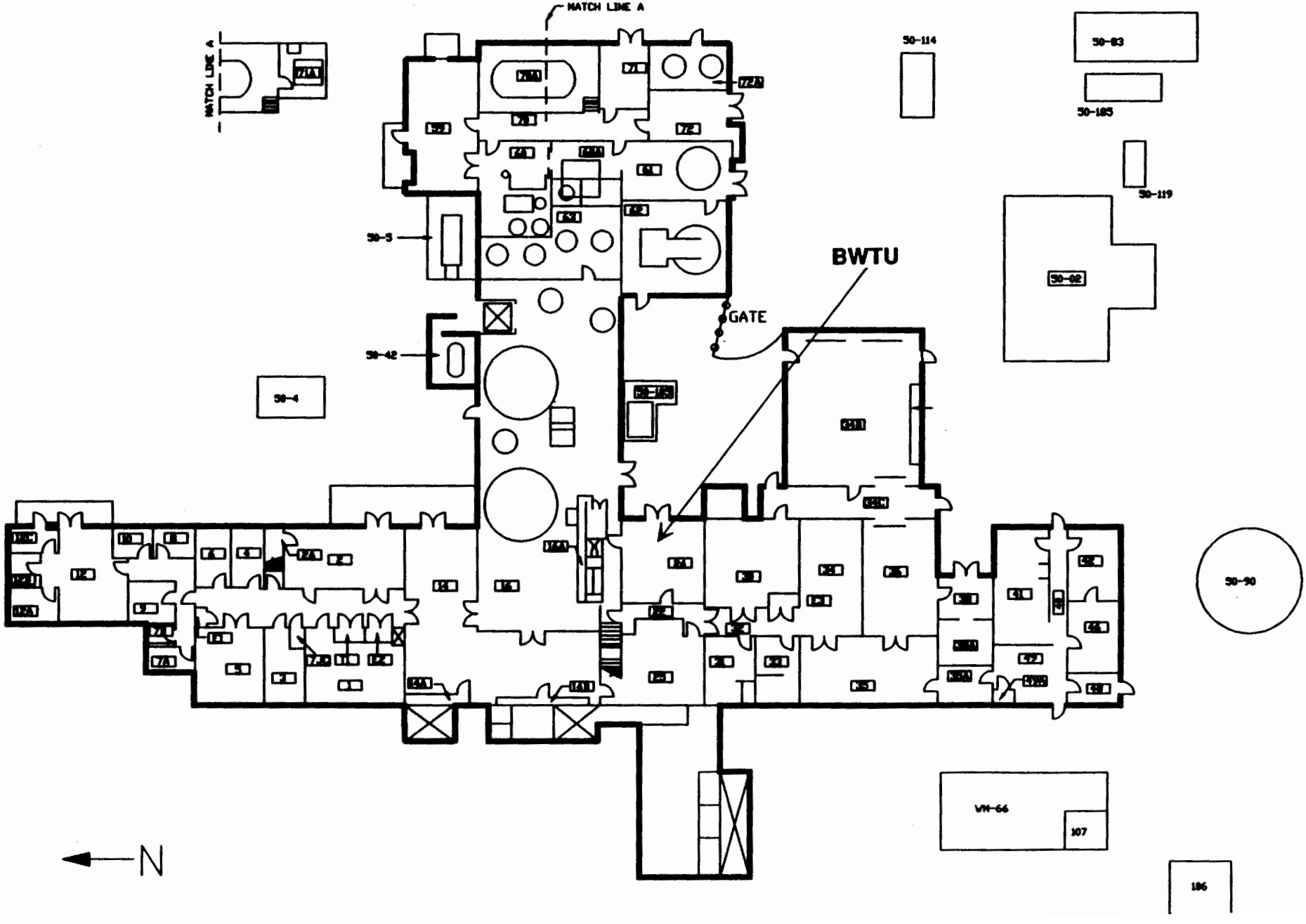
APPENDIX A

SITE AND HOSPITAL LOCATION MAPS

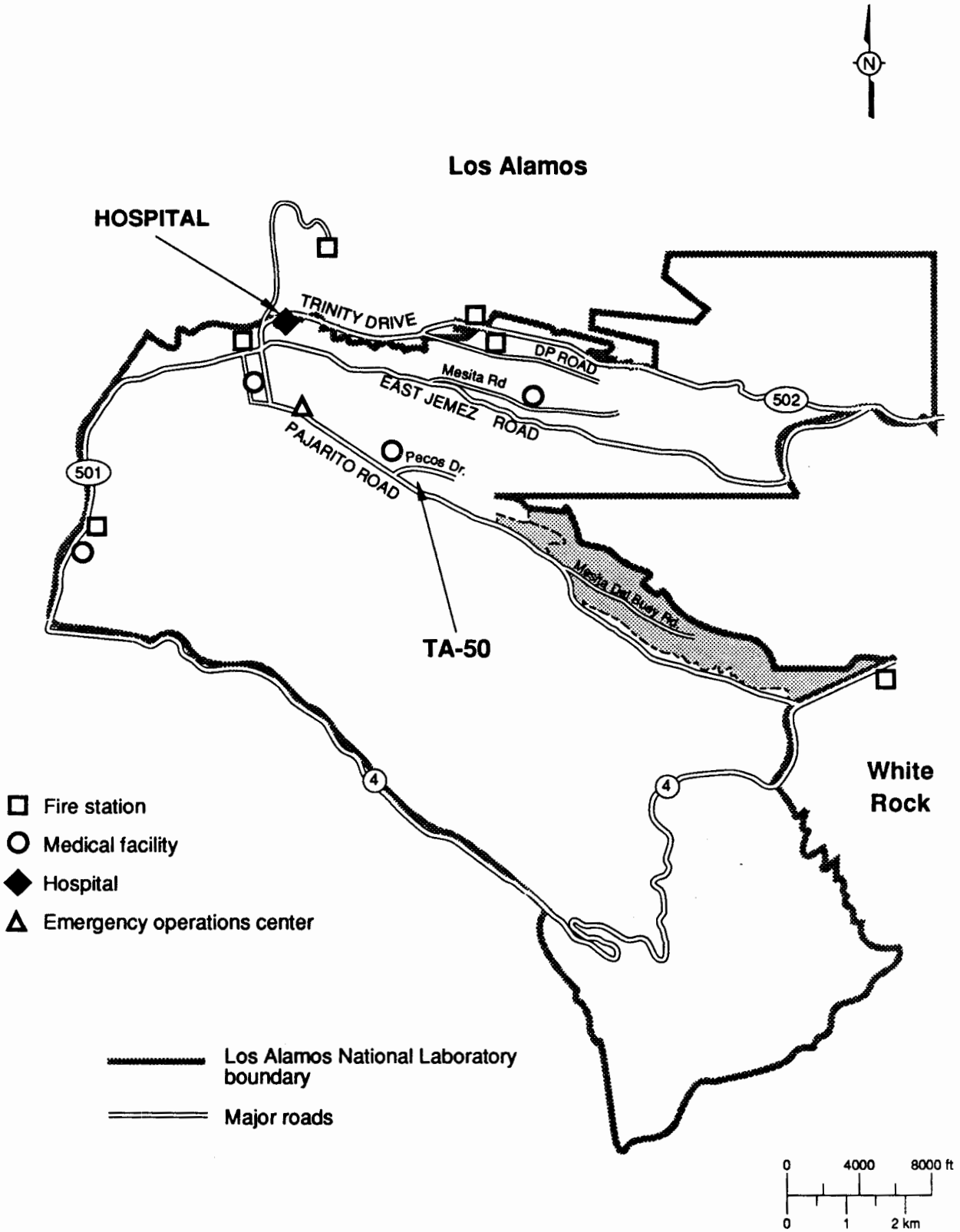
TA-50-1 DIAGRAM



TA-50-1 DIAGRAM



301597 A3



Hospital Location Map and Emergency facilities for field work at TA-50

1/94

APPENDIX B

HAZARDS ORIENTATION FOR VISITORS AND PERSONNEL WITH ESCORTED AND UNESCORTED ACCESS TO TA-50-1

HAZARDS ORIENTATION

for

VISITORS AND PERSONNEL

with

ESCORTED AND UNESCORTED ACCESS TO TA-50-1

Prepared by _____ 07-07-93
Wm. David Moss, EM-7 — Date
Building Manager

Reviewed by _____ 7-7-93
Alan Bond, EM-7 — Date
Staff Member

Approved by _____ 7.7.93
Steve Hanson, EM-7 — Date
Section Leader

Approved by _____ 7/9/93
Anthony Drypolcher, EM-7 — Date
Group Leader

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ORIENTATION FOR PERSONNEL WITH UNESCORTED ACCESS TO TA-50-1 4
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2.0 Contaminated Areas 4

ORIENTATION FOR VISITORS TO TA-50-1

1.0 VISITOR REGISTER

All visitors must sign in on the visitor register at the front desk as they arrive at the building. When leaving the building, they must sign out on this register.

2.0 AREAS AT TA-50-1

TA-50-1 is separated into the following three distinct areas to keep radioactive exposure to personnel as-low-as-reasonably-achievable (ALARA):

- uncontrolled (public) areas,
- radiologically-controlled areas, and
- radiologically-contaminated areas.

2.1 Uncontrolled Areas

Offices and their connecting passageways are uncontrolled areas. Visitors do not need an escort, but must read the building evacuation procedures and hazard information.

2.1.1 Hazards

Plant operations areas, chemistry laboratories, and solid waste management units (SWMUs) are areas that may contain hazards. The following hazards may be encountered:

- radioactive materials,
- corrosive chemicals,
- solvents,
- asbestos insulation, and
- compressed gases.

2.1.2 Evacuation Procedures

A alarm or a page on the paging system will alert personnel if TA-50-1 must be evacuated. If a evacuation is required, visitors will do the following:

- proceed to the muster area in front of the Controlled Air Incinerator Building, TA-50-37. This building is opposite the main entrance to TA-50-1.
- remain at the muster area until instructed to leave.

2.2 Controlled and Contaminated Areas

Entrances to radiologically-controlled and radiologically-contaminated areas are posted with signs. Visitors who have not received specific training for unescorted access into these areas must have an escort when they enter these areas.

ORIENTATION FOR ESCORTED ACCESS TO TA-50-1

All individuals entering a radiologically-controlled or contaminated area must have specific training. Anyone without the specified training must be escorted at all times in these areas.

1.0 CONTROLLED AREAS

Plant operations areas and chemistry laboratories are controlled areas. Visitors must be escorted in these areas and must do the following:

- wear a dosimetry badge (TLD);
- obey signs posted in front of the area;
- leave the area if a continuous air monitor (CAM) alarm sounds or if the power fails;
- use hand and foot monitors when leaving the area; and
- have any items taken out of the area swiped by a RCT.

2.0 CONTAMINATED AREAS

Parts of the Pretreatment Plant and WM-2 are designated as contaminated areas. In addition to the requirements listed for controlled areas, the following is required:

- a HS-1 radiation control technician (RCT) must monitor visitors as they leave the area and
- special clothing and equipment may be required.

ORIENTATION FOR PERSONNEL WITH UNESCORTED ACCESS TO TA-50-1

Individuals who require unescorted access to TA-50-1 must receive a copy of the "Quick Response Emergency Plan, TA-50-1." To keep radioactive exposure as-low-as-reasonably-achievable (ALARA), additional orientation is required for unescorted access to radiological areas.

1.0 CONTROLLED AREAS

Before unescorted access is allowed, individuals must do the following:

- watch the TA-50-1 site-specific video. This video covers radiological and chemical hazards, alarms, emergency procedures, and safety procedures for radiological areas;
- after watching the video, complete a short test on the video. The completed test is turned into the HS-1 radiation control technician (RCT). This training shall be repeated annually;
- have received radiation worker training from HS-3; and
- be listed on the Pu list.

Note: Any items taken out of a controlled area must be swiped by a RCT.

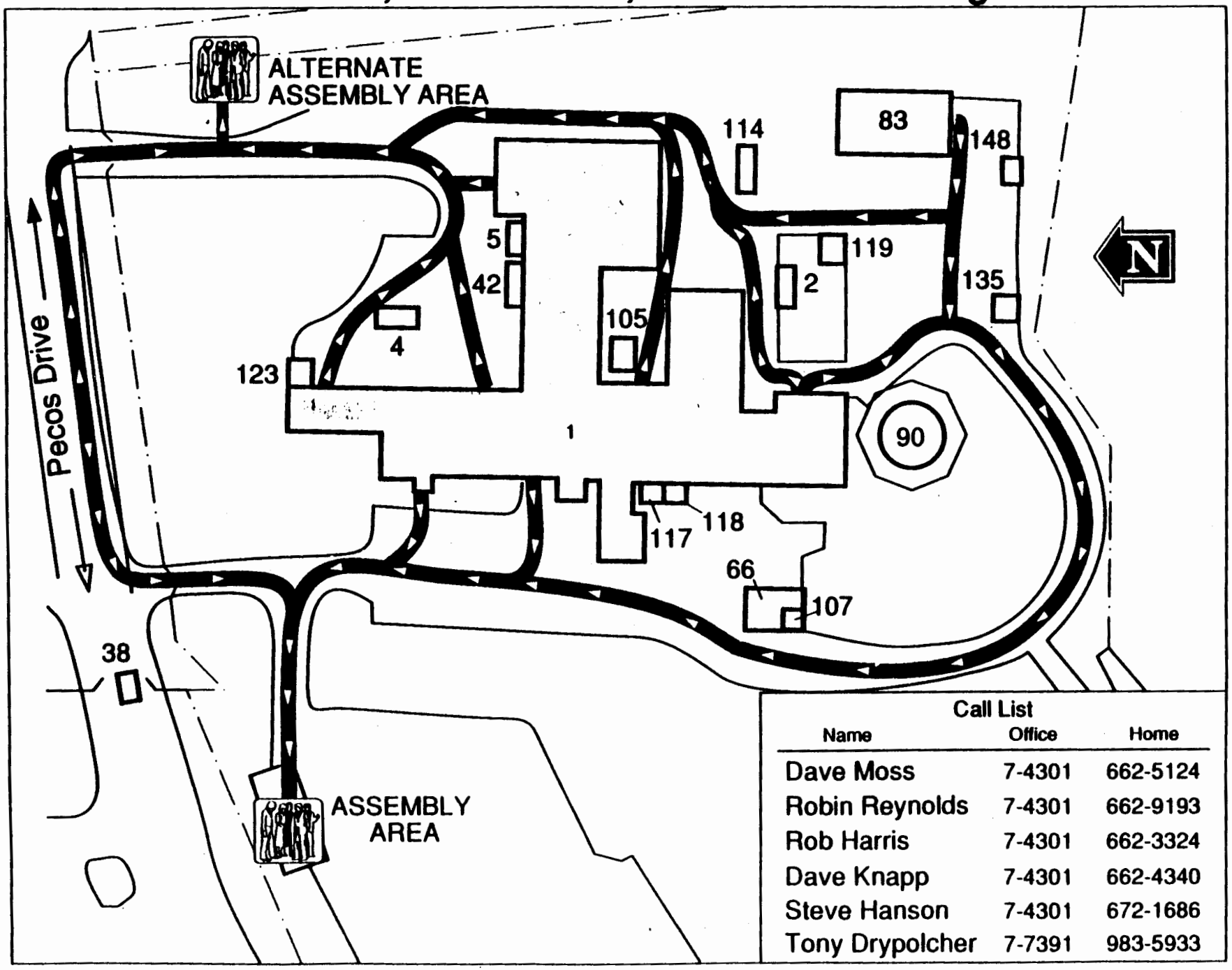
2.0 CONTAMINATED AREAS

In addition to the requirements listed for controlled areas, a RCT must monitor individuals as they leave the area.

IS-1/93-7? 1/93

EMERGENC, INFORMATION

TA-50, BLDG. WM-1, Basement and Bldg.83



Call List

Name	Office	Home
Dave Moss	7-4301	662-5124
Robin Reynolds	7-4301	662-9193
Rob Harris	7-4301	662-3324
Dave Knapp	7-4301	662-4340
Steve Hanson	7-4301	672-1686
Tony Drypolcher	7-7391	983-5933

APPENDIX C

CHEMICAL EXPOSURE INFORMATION

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Acetic acid [64-19-7]	10.37	0.5–24	Inh	Conjunctivitis, lacrimation; irritated nose and throat; pharyngeal edema, chronic bronchitis; burns eyes and skin; skin sensitization; dental erosion; black skin; hyperkeratosis.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	10 ppm 10 ppm 10 ppm	— 15 ppm 15 ppm	PEL TLV REL	1,000 ppm
Acetone [67-64-1]	9.7	13–100	Inh Ing Con	Irritated eyes, nose, and throat; headache, dizziness; dermatitis.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	750 ppm 750 ppm 250 ppm	1,000 ppm 1,000 ppm	PEL TLV REL	20,000 ppm
Acetonitrile (methyl cyanide) [75-05-8]	12.2	1,160	Inh Ing Con Abs	Asphyxiation; nausea, vomiting; chest pain; weakness; stupor, convulsions; eye irritation.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	40 ppm 40 ppm 20 ppm	60 ppm 60 ppm	PEL TLV REL	4,000 ppm
Acids [NA]	NA	NA	Con Ing Inh	See specific acids.	Eye: Irrigate immediately (15 mins) Skin: Water flush immediately Swallow: Immediate medical attention			PEL TLV REL	
Alcohol [NA]	NA	NA	?	See specific alcohols.				PEL TLV REL	
Aluminum, metal dust as Al [7429-90-5]	NA	NA	Inh	Physical irritation of eyes, nose, mouth, lungs; lung changes.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	15*, 5** ppm 10 ppm 10*, 5** ppm *total dust **resp. fract.		PEL TLV REL	
Aluminum oxide [1344-28-1]	NA	NA	Inh	Pulmonary fibrosus; emphysema.	Breathe: Respiratory support	10 mg/m^3 * 10 mg/m^3 *total dust, 5 mg/m^3 respirable		PEL TLV REL	NE

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Amatol—high explosive (ammonium nitrate: 80%/20%) [NA]			Inh Ing Con	Moderately toxic by inhalation and ingestion routes. An allergen. May cause contact dermatitis. Dangerous fire hazard. An explosive by shock, spontaneous chemical reaction, or exposure to flame. Decomposition emits highly toxic fumes.				PEL TLV REL	
Ammonia [7664-41-7]	10.18	1–47	Inh Ing Con	Irritated eyes, nose, and throat; dyspnea; bronchial spasms, chest pain; pulmonary edema; pink frothy sputum; skin burns, vesiculation.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	25 ppm 25 ppm	35 ppm 35 ppm 35 ppm	PEL TLV REL	500 ppm
Ammonium hydroxide, see Ammonia. [1136-21-6]								PEL TLV REL	
Ammonium nitrate [6484-52-2]	NA	?	Inh Con	Caustic to skin; an allergen.	Eye: Irrigate immediately (15 mins) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Antimony and compounds (as Sb) [7440-36-0]	NA	?	Inh Con	Irritated nose, throat, and mouth; cough; dizziness and headache; nausea and vomiting; diarrhea and stomach cramps; insomnia; anorexia; irritated skin; unable to smell properly.	Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m^3 0.5 mg/m^3 0.5 mg/m^3		PEL TLV REL	80 mg
Arsenic and soluble inorganic compounds (as As) [7740-38-2]	NA	NA	Inh Abs Ing Con	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances; hyperpigmentation of the skin (carcinogenic); peripheral neuropathy, respiratory irritation.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediately medical attention	0.01 mg/m^3 0.2 mg/m^3 (Ca-29 CFR 1910.1018 inorganic compounds)	C0.002 mg/m^3	PEL TLV REL	Ca [100 mg/m^3]

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Asbestos (all forms) [1332-21-4]	NA	NA	Inh Ing	Difficulty breathing, fibrous tissue in lung spaces, restricted pulmonary function, finger clubbing; carcinogen, asbestosis, mesothelioma.	Eye: Irrigate immediately	0.2 fibers/cc (1910.1001) 0.1 fibers/cc	1.0 fibers/cc (30-min)	PEL REL	Carcinogen
Amosite [12172-73-5]						0.5 fibers/cc		TLV	
Chrysotile [12001-29-5]						2 fibers/cc		TLV	
Crocidolite [12001-28-4]						0.2 fibers/cc		TLV	
Other Forms						2 fibers/cc		TLV	
Baratol—High explosive ($C_{17}H_{36}N_2 \cdot 2CH_3O_4S$) (TNT 24%/ barium nitrate 76%) [14149-43-0]	?	?	Con Ing	Poison by intraperitoneal, subcutaneous, and ocular routes.				PEL TLV REL	
Barium soluble compounds (as Ba) [7440-39-3]	?	NA	Inh Ing Con	Upper respiratory irritation; gastroenteritis; muscular spasms; slow pulse, extra systoles; hypokalemia; eye and skin irritation; skin burns.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m^3 0.5 mg/m^3 0.5 mg/m^3		PEL TLV REL	1,100 mg/m^3
Bases [NA]	NA	NA	Con Ing Inh	Corrosive to skin, eyes, digestive tract. See also specific bases.	Eye: Irrigate immediately (15 mins) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Benzene [71-43-2]	9.24	34–119	Inh Abs Ing Con	Irritates eyes, nose, respiratory system; giddiness; headache, nausea, staggered gait; fatigue, anorexia, lassitude; dermatitis; bone-marrow depression. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	1 ppm (10 ppm) NIC–0.1 skin 0.1 ppm	5 ppm C1 ppm (Ca)	PEL TLV REL	Ca [1,000 ppm]* *OSHA
Beryllium and compounds (as Be) [7440-41-7]	NA	NA	Inh	Respiratory systems; weakness, fatigue, weight loss. Carcinogenic.	Eye: Irrigate immediately	0.002 mg/m^3 [c] 0.002 mg/m^3 0.0005 mg/m^3	C0.005 mg/m^3	PEL TLV REL	Ca [10 mg/m^3]
Black powder—high explosive (potassium nitrate: charcoal:sulfur in a 15:3:2 ratio) [NA]			Ing	Poison by injection into blood; moderately toxic by ingestion; large quantities may cause inflammation of the digestive tract; chronic exposure causes blood and kidney problems.	Swallow: Immediate medical attention			PEL TLV REL	
Boron trifluoride [7637-07-2]	15.5	?	Inh Con	Nasal irritation, epistaxis; burns eyes and skin in animals: pneumonia; kidney damage.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support		C1 ppm C1 ppm C1 ppm	PEL TLV REL	100 ppm
1,3-Butadiene [106-99-0]	9.07	0.16–1.6	Inh Con	Irritation of eyes, nose, and throat; drowsiness, lightheadedness; frostbite. Carcinogenic.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support	1,000 ppm 10 ppm	Lowest feasible exposure	PEL TLV REL	Ca [20,000 ppm] [LEL]

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Cadmium dust (as Cd) [7440-43-9]	NA	NA	Inh Ing	Pulmonary edema, dyspnea, cough, chest tightness, substernal pain; headache; chills, muscular aches; nausea, vomiting, diarrhea; anosmia, emphysema, proteinuria, mild anemia. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiration support Swallow: Immediate medical attention	0.005 mg/m^3 0.01 mg/m^3 Ca, lowest feasible concentration		PEL TLV REL	Ca [50 mg/m^3]
Carbon black [1333-86-4]	NA	NA	Inh Con	None expected; in presence of polycyclic aromatic hydrocarbons. Carcinogenic.	Eye: Irrigate promptly	3.5 ppm 3.5 ppm 3.5 ppm (0.1 ppm in presence of PAHs) Ca		PEL TLV REL	NE
Carbon dioxide [124-38-9]	13.77	74,000	Inh Con	Headache, dizziness, restlessness, paresthesia; dyspnea, sweating, malaise; increased heart rate, pulse; elevated blood pressure; coma; asphyxia; convulsions at high concentrations; frostbite (dry ice).	Eye: Medical attention Skin: Medical attention for frostbite Breath: Respiratory support	10,000 ppm 5,000 ppm 5,000 ppm	30,000 ppm 30,000 ppm 30,000 ppm	PEL TLV REL	50,000 ppm
Carbon tetrachloride [56-23-5]	11.47	140–584	Inh Abs Ing Con	Central nervous system depressant; nausea, vomiting; liver, kidney damage; skin irritant. Suspected carcinogen.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediately medical attention	2 ppm 5 ppm (skin)	2 ppm* *60-min Ca	PEL TLV REL	Ca [300 ppm]

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Chlorine [7782-50-5]	11.48	0.01–0.31	Inh Con	Burning of eyes, nose, and mouth; lacrimation, rhinorrhea; coughing, choking, and substernal pain; nausea and vomiting; headaches and dizziness; syncope; pulmonary edema; pneumonia; hypoxemia; dermatitis; eye and skin burns.	Eyes: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support	0.5 ppm 0.5 ppm 0.5 ppm	1 ppm 1 ppm 1 ppm	PEL TLV REL	30 ppm
Chlorodiphenyl (42% chlorine) See polychlorinated biphenyls (PCB) [53469-21-9]	?	?	Inh Abs Ing Con	Irritated eyes; chloracne; liver damage. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 (skin) 1 mg/m^3 (skin) 0.001 mg/m^3 Ca		PEL TLV REL	Ca [10 mg/m^3]
Chlorodiphenyl (54% chlorine), see polychlorinated biphenyls (PCB). [11097-69-1]	?	?	Inh Abs Ing Con	Irritated eyes and skin; acne-form dermatitis; (carcinogenic); in animals: causes liver damage.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m^3 (skin) 0.5 mg/m^3 (skin) 0.001 mg/m^3 Ca		PEL TLV REL	Ca [5 mg/m^3]
Chloroform (trichloromethane) [67-66-3]	11.42	133–276	Inh Ing Con	Dizziness, mental dullness, nausea, disorientation; headache, fatigue; anesthesia; liver enlargement; irritated eyes, skin. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	2 ppm* 10 ppm *OSHA	2 ppm* *60 min	PEL TLV REL	Ca [1,000 ppm]

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Chromic acid and chromates (as CrO_3) (Chrome VI) [7738-94-5]	NA	NA	Inh Ing Con	Respiratory system irritation, nasal septum perforation; liver and kidney damage; leukocytosis, leukopenia, monocytosis, eosinophilia; eye injury and conjunctivitis; skin ulceration and dermal sensitization. Carcinogenic.	Eye: Irrigate immediately Skin: Soap flush immediately Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m^{3*} 0.001 mg/m^{3*} *as Cr	C0.1 mg/m^{3*} *as CrO_3	PEL TLV REL	Ca [30 mg/m^3]
Chromium metal (as Cr) [7440-47-3]	NA	NA	Inh Ing	Histologic fibrosis of lungs.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 0.5 mg/m^3 0.5 mg/m^3		PEL TLV REL	NE
Chromium sulfate [64093-79-4]	?	?	Inh Ing Con			0.5 mg/(Cr)/m^3 0.5 mg/(Cr)/m^3		PEL TLV REL	
Coal-tar-pitch volatiles (benzene-soluble fraction) (polynuclear aromatic hydrocarbons [PAH]) [65996-93-2]	?	?	Inh Con	Eye sensitivity to light, eye and skin irritation; dermatitis, bronchitis. Carcinogenic.	Eye: Irrigate immediately (15 mins) Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention	0.2 mg/m^3 0.2 mg/m^3 0.2 mg/m^3 (cyclohexane extractable) Ca		PEL TLV REL	Ca [700 mg/m^3]
Cobalt metal dust and fumes [7440-48-3]	NA	600	Inh Ing Con	Coughing, dyspnea, decreased pulmonery function; low-weight; dermatitis; diffused nodular fibrosis; respiratory hypersensitivity	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m^3 0.05 mg/m^3 0.05 mg/m^3		PEL TLV REL	20 mg/m^3

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Composition B—high explosive (RDX 60%/TNT 40%) [NA]	NA	?		See RDX and 2,4,6-trinitrotoluene (TNT).	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention			PEL TLV REL	?
Composition C4, Class 3—high explosive (RDX 89.9–92.0%) [NA]	?	?	Inh Ing Con	RDX—Allergic skin reaction; irritation of the eyes; prolonged exposure to dust causes convulsions or unconsciousness; chronic effects unknown; bone marrow and liver damage. Other ingredients—no significant effects.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention			PEL TLV REL	
Compound B [50-22-6]	?	?	Inh con Inh	When heated to decomposition, emits acrid smoke and fumes.				PEL TLV REL	
Copper dusts and mists (metal) (copper sulfate) [7440-50-8]	NA	NA	Inh Ing Con	Irritated pharynx and nasal mucous membrane; nasal perforation; eye irritation; metallic taste; dermatitis; in animals: lung, kidney, and liver damage; anemia.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 1 mg/m^3 1 mg/m^3		PEL TLV REL	NE

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Cresol (all isomers) [1319-77-3] (Methyl phenol)	8.98	?	Inh Abs Ing Con	CNS effects; confusion, depression, respiratory failure; dyspnea, irregular rapid respiration, weak pulse; skin, eye burns; dermatitis; lung, liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	5 ppm (skin) 5 ppm (skin) 2.3 ppm		PEL TLV REL	250 ppm
Cyanides: calcium, potassium, and sodium [592-01-8, 151-50-8, 143-33-9]	NA	?	Inh Abs Ing Con	Asphyxiation and death can occur; weakness, headache, and confusion; nausea and vomiting; increased respiratory rate; slow respiratory gasping; irritated eyes and skin.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m^3 5 mg/m^3 (skin)	C5 mg/m^3 * C5 mg/m^3 * 10 min	PEL TLV REL	50 mg/m^3
Cyclonite—high explosive (RDX) [121-82-4]	NA	?	Inh Ing Con	Allergic skin reaction; irritation of the eyes; prolonged exposure to dust causes convulsions or unconsciousness; chronic effects unknown; bone marrow and liver damage.	Eye: Irrigate immediately (15 min) Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention	1.5 mg/m^3 (skin) 1.5 mg/m^3 (skin) 1.5 mg/m^3 (skin)	3 mg/m^3	PEL TLV REL	
Descalants [NA]	NA	NA		Not specific—no information.				PEL TLV REL	
1,2-Dichloroethane (ethylene dichloride) [107-06-02]	11.05	?	Inh Abs Ing Con	Depressed central nervous system, nausea, vomiting, dermatitis, irritated eyes, corneal opacity. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	1 ppm 10 ppm 1 ppm	2 ppm 2 ppm	PEL TLV REL	Ca [1,000]

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
1,2-Dichloroethylene [540-59-0]	9.65	17	Inh Ing Con	Irritated eyes and respiratory system; depressed central nervous system.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	200 ppm 200 ppm 200 ppm		PEL TLV REL	4,000 ppm
Dichlorofluoromethane (Freon-21) ($CHCl_2F$) [75-43-4]	12.39	?	Inh Ing Con	Asphyxia, cardiac arrhythmia, cardiac arrest.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	10 ppm 10 ppm 10 ppm		PEL TLV REL	50,000 ppm
Dichloromethane, see methylene chloride									
Ethane [74-84-0]	11.65	120,000	Inh	Simple asphyxiant.	Breath: Respiratory support			PEL TLV REL	
Ethanol, see Ethyl alcohol									
Ethyl alcohol (ethanol) [64-17-5]	10.48	10–716	Inh Ing	<1,000 ppm: no signs of intoxication; >1,000 ppm: headache, eyes, nose, and throat irritation; drowsiness; lassitude; loss of appetite; inability to concentrate; ingestion of large amounts; possible alcohol poisoning; depressed central nervous system.	Eye: Irrigate immediately Skin: Soap wash immediately Swallow: Immediate medical attention	1,000 ppm 1,000 ppm 1,000 ppm		PEL TLV REL	
Ethyl benzene [100-41-4]	8.76	0.09–0.6	Inh Ing Con	Irritates eyes, mucous membranes; headache; dermatitis; narcosis, coma.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm 100 ppm	125 ppm 125 ppm 125 ppm	PEL TLV REL	2,000 ppm

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Ethylene [74-85-1]	?	290	Inh	Vapors may cause dizziness or suffocation. Contact will cause severe frostbite. Fire may produce irritating or poisonous gases.	Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.	simple asphyxiant		PEL TLV REL	
Ethylene glycol [107-21-1]	?	0.1–40	Ing Inh	Human poisoning by ingestion; moderately toxic to humans; moderate toxicity experienced by ingestion and/or subcutaneous, intravenous, and intramuscular routes. Human systemic effects by ingestion and inhalation; eye lacrimation, general anesthesia, headache, coughing, respiratory stimulation, nausea, vomiting, pulmonary, kidney, and liver changes; depressed central nervous system; potential lethal kidney damage.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention		C50 ppm C50 ppm	PEL TLV REL	
Ferric chloride, see iron salts.									

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Fuel oil (diesel oil, medium)	?	?	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention			PEL TLV REL	
Fuel Oil #1, see Kerosene. [NA]								PEL TLV REL	
Fuel Oil #2, see fuel oil. [NA]								PEL TLV REL	
Fuel Oils #4, 5, and 6 [NA]	?	?	Abs Con	Low toxicity; prolonged contact may produce systemic effects.	Eye: Irrigate immediately (15 mins) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	
Gasoline [8006-61-9]	?	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 mins) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm 300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm 500 ppm	PEL TLV REL	?

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Hexafluoroacetone [684-16-2]	?	?	Inh Con	Poisonous; may be fatal if inhaled or absorbed through skin. Contact may cause burns to skin and eyes. Contact with liquid may cause frostbite.	Move victim to fresh air, and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen. Remove and isolate contaminated clothing and shoes at the site. In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes. Keep victim quiet, and maintain normal body temperature. Effects may be delayed; keep victim under observation.	0.1 ppm (skin) 0.1 ppm (skin) 0.1 ppm (skin)		PEL TLV REL	?
n-Hexane [110-54-3]	10.18	65–248	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	50 ppm 50 ppm 50 ppm		PEL TLV REL	5,000 ppm
HMX (octagen)—high-explosive [2691-41-0]	NA	?	Inh Ing Con	Allergic skin reaction; irritation of the eyes; prolonged exposure to dust causes convulsion or unconsciousness; chronic effects are unknown; bone marrow and liver damage.	Eye: Irrigate immediately (15 min) Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention		Not established	PEL TLV REL	?
Hydraulic oil [NA]	?	?						PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Hydrazine [301-01-2]	8.93	3–4	Inh Abs Ing Con	Irritated eyes, nose, throat; temporary blindness; dizziness, nausea; dermatitis; burns skin, eyes; in animals; bronchitis, pulmonary edema; liver, kidney damage; convulsions. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention	0.1 ppm (skin) 0.1 ppm (skin)	C0.03 ppm* *120–min	PEL TLV REL	Ca [18 ppm]
Hydrogen chloride (hydrochloric acid) [74-90-8]	12.74	0.255–10.6	Inh Ing Con	Inflamed nose, throat, larynx; cough, burns throat, choking; burns eyes, skin; dermatitis; in animals; laryngeal spasm; pulmonary edema.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C5 ppm C5 ppm C5 ppm	PEL TLV REL	100 ppm
Hydrogen fluoride (as F) (Hydrofluoric acid, anhydrofluoric acid) (7664-39-7)	15.98	0.04	Inh Abs Ing Con	Irritated eyes, nose, and throat; pulmonary edema; skin, eye burns; nasal congestion; bronchitis.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	3 ppm 3 ppm	6 ppm C3 ppm* 6 ppm * ceiling; 6x TLV maximum	PEL TLV REL	30 ppm
Iron oxide (dust and fumes [as Fe]) [1309-37-1]	NA	NA	Inh	Nonprogressive dust-caused lung disease, with x-ray shadows indistinguishable from progressive fibrous lung disease.	Breath: Respiratory support	10 mg/m^3* 5 mg/m^3 5 mg/m^3* *total particulate		PEL TLV REL	NE

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Iron salts, soluble (as Fe)	NA	NA	Inh Con Ing	Respiratory, skin irritation; irritation and damage of intestinal tract and central nervous system.	Eye: Irrigate immediately (15 min) Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 1 mg/m^3 1 mg/m^3		PEL TLV REL	NE
Isobutane [75-28-5]	?	?	Inh	Vapors may cause dizziness or suffocation.	Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.			PEL TLV REL	
Isobutylene [15-11-7]	?	?	Inh	Vapors may cause dizziness or suffocation.	Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.			PEL TLV REL	
Isopropanol, see isopropyl alcohol.									
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43–200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	12,000 ppm
JP-4 jet fuel [NA]	?	?	Abs Inh Ing Con	Central nervous system depressant; irritated mucous membranes; pneumonitis (with direct liquid contact); contains benzene, which is a suspected carcinogen.		200 ppm	300 ppm	PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Kerosene [8008-20-6]	?	?	Ing	Less toxic than diesel oil; ingestion may lead to systemic effects and aspiration hazards; gastrointestinal irritation, vomiting, diarrhea; drowsiness, nerve depression, coma, death; pulmonary edema, pneumonitis, liver damage.	Eye: Irrigate immediately (15 mins.) Skin: Soap wash Swallow: Immediate medical attention	100 mg/m^3		PEL TLV REL	
Lead inorganic dusts & fumes (as Pb) [7439-92-1]	NA	NA	Inh Ing Con	Weakness, lassitude, insomnia; facial pallor; eye pallor, anorexia, low body weight, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremors; wrist and ankle paralysis; brain damage; kidney damage; irritated eyes; hypotension.	Eye: Irrigate immediately Skin: Soap flush promptly Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m^3 0.15 mg/m^3 <0.1 mg/m^3 See 29 CFR 1910.1025 Blood lead <0.060 mg/100 g whole blood		PEL TLV REL	700 mg/m^3
Lithium (reactive with water and 02—probably does not exist in pure form). See lithium hydride. [7439-93-2]								PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Lithium hydride [7580-67-8]	NA	NA	Inh Ing Con	Burns eyes and skin; burns mouth and esophagus if ingested; nausea; muscular twitches; mental confusion; blurred vision.	Eye: Irrigate immediately Skin: Soap flush promptly Breath: Respiratory support Swallow: Immediate medical attention	0.025 mg/m^3 0.025 mg/m^3 0.025 mg/m^3		PEL TLV REL	55 mg/m^3
Machining/cutting oils [NA]	?	?	Ing Con	Contact dermatitis; inflammation of hair follicles on skin areas chronically contacted; formation of skin lesions which may contain pus; dark pigment deposits under skin.	Skin: Soap wash promptly Swallow: Immediate medical attention			PEL TLV REL	
Manganese dust and compounds (as Mn) [7439-96-5]	NA	NA	Inh Ing	Parkinson's; asthenia, insomnia, mental confusion; metal fume fever; dry throat, cough, tight chest, dyspnea, rales, flu-like fever; low-back pain; vomiting; malaise; fatigue.	Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m^3 1 mg/m^3	C5 mg/m^3 3 mg/m^3	PEL TLV REL	NE
Mercury vapor [7439-97-6]	?	?	Inh Abs Con	Coughing, chest pain, dyspnea, bronchial pneumonitis; tremors, insomnia; irritability, indecision; headache, fatigue, weakness stomatitis, salivation; gastrointestinal disturbance, anorexia, low weight; proteinuria, irritated eyes, and skin.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediately medical attention	0.05 mg/m^3 (skin) 0.05 mg/m^3 (skin) 0.05 mg/m^3 (skin)		PEL TLV REL	28 mg/m^3

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Methanol (methyl alcohol) [67-56-1]	10.85	4.2–5960	Inh Abs Ing Con	Irritated eyes, headache, drowsiness, lightheadedness, nausea, vomiting, disturbance in vision, blindness.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Fresh air Swallow: Immediate medical attention	200 ppm (skin) 200 ppm (skin) 200 ppm	250 ppm 250 ppm 250 ppm	PEL TLV REL	25,000 ppm
Methylene chloride (dichloromethane) [75-09-2]	11.32	?	Inh Ing Con	Fatigue, weakness, sleepiness, lightheadedness; numbness and tingling in limbs; nausea; irritated eyes and skin.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	500 ppm 50 ppm	C1,000 ppm; C2,000 mg/m^3 (5 min in 2 hrs)	PEL TLV REL	Ca (5,000 ppm)
Methyl cyanide, see acetonitrile									
Methyl ethyl ketone [78-93-3]	9.54	2–85	Inh Ing Con	Irritated eyes and nose; headache, dizziness; vomiting.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Fresh air Swallow: Immediate medical attention	200 ppm 200 ppm 200 ppm	300 ppm 300 ppm 300 ppm	PEL TLV REL	3,000 ppm
Molybdenum (insoluble compounds as Mo) [7439-98-7]	NA	?	Inh Ing	In animals: irritated eyes, nose, throat; loss of appetite, diarrhea, low weight; listlessness; liver, kidney damage.	Breath: Respiratory support Swallow: Immediate medical attention	10 mg/m^3* 10 mg/m^3 *Total dust		PEL TLV REL	NE
Molybdenum (soluble compounds as Mo) [7439-98-7]	NA	?	Inh Ing Con	In animals: loss of appetite; incoordination; irritated eyes, nose, throat; difficult breathing; anemia.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m^3 5 mg/m^3		PEL TLV REL	NE
Motor oil [NA]	?	?	Inh Ing	See oil mist; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 mins) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	
Naptha, see petroleum distillate									

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Nickel, metal, and other compounds (as Ni) [7440-02-0]	NA	NA	Inh Ing Con	Headache, vertigo; nausea, vomiting, epigastric pain; substernal pain; coughing, hyperpnea; cyanosis; weakness; leukocytosis, pneumonitis; delirium, convulsions. Carcinogenic.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 (1 mg/m^3) * 0.015 mg/m^3 Ca * NIC—0.05 A1		PEL TLV REL	Ca NE
Nitric acid [7697-37-2]	11.95	0.3–1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	100 ppm
Nitric oxide [10102-43-9]	9.27	?	Inh Con	Irritated eyes, nose, and throat; drowsiness; unconsciousness.	Breath: Respiratory support	25 ppm 25 ppm 25 ppm		PEL TLV REL	1,000 ppm
Nitrocellulose [9004-70-0]	NA	?	Ing	Low toxicity.	Eye: Irrigate immediately Breath: Respiratory support Swallow: Immediate medical attention			PEL TLV REL	
Nitrogen dioxide [10102-44-0]	9.75	0.39–5	Inh Ing Con	Coughing, mucoid frothy sputum, dyspnea; chest pain; pulmonary edema, cyanosis, tachypnea, tachycardia; irritated eyes.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	3 ppm	1 ppm 5 ppm 1 ppm	PEL TLV REL	50 ppm
Nitroguanidine—high explosive [556-88-7]		NA	?	Mutation data reported.	Swallow: Immediate medical attention			PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Nitromethane [75-52-5]	11.08	3.5	Inh Ing Con	Dermatitis; weakly narcotic; respiratory irritant; liver damage on long exposure.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm* *20 ppm proposed		PEL TLV REL	1,000 ppm
Nitrostyphenate [NA]				No information.				PEL TLV REL	
Octol—high explosive (HMX 70–75%/ TNT 25–30%) [NA]	NA	?		See HMX and 2,4,6-trinitrotoluene (TNT).	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention			PEL TLV REL	?
Oil mist (mineral) [8012-95-1]	?	?	Inh	None reported.	Skin: Soap wash Breath: Fresh air	5 mg/m^3 5 mg/m^3 5 mg/m^3	10 mg/m^3 10 mg/m^3	PEL TLV REL	NE
PBX-9205—high-explosive (RDX 91.5–92.5% polystyrene 5.7–6.3% dioctyl phthalate [DOP] 1.7–2.3%) [NA]	?	?	Inh Ing Con	Allergic skin reaction, eye irritation; DOP harmful if absorbed through skin; RDX dust can cause convulsions; bone marrow and liver damage.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention			PEL TLV REL	
PBX-9404—high-explosive	NA	?	Inh Ing Con	Allergic skin reaction; irritation; chronic dust exposure can cause convulsions or unconsciousness; chronic systemic effects to bone marrow and liver.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	NA LD_{50} Oral-Mouse-1500 mg/kg		PEL TLV REL	?

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Pentaerythritol (PETN)—high explosive [115-77-5]	?	?	Inh Ing Abs	Mildly toxic by ingestion. A nuisance dust. Flammable.	Eye: Irrigate immediately (15 min) Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention	10 mg/m^3* 10 mg/m^3* *total dust limit LD50-mouse-25, 500 mg/kg		PEL TLV REL	
Pentaerythritol tetranitrate—high explosive (78-11-5)	?	?	Ing Abs	Human systemic effects by ingestion; dermatitis; headache, weakness, falling blood pressure.		Oral-man-1669 mg/kg			
Petroleum distillate (naptha) [8002-05-9]	?	?	Con Ing	Caughing, dypsnea, nausea, or vomiting.		400 ppm		PEL TLV REL	
Petroleum hydrocarbons, see Stoddard solvent									
Phenol [108-95 2]	8.5	0.040–3.0	Inh Abs Ing Con	Irritated eyes, nose, and throat; anorexia, low weight; weakness, muscular aches and pains; dark urine; cyanosis; liver and kidney damage; skin burns; dermatitis; ochronosis; tremors, convulsions, twitching.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	5 ppm (skin) 5 ppm (skin) 5 ppm (skin)	C15.6 ppm	PEL TLV REL	250 ppm

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Picric acid [88-89-1]	?	?	Inh Abs Con	Irritated eyes; sensitive dermatitis; yellow-stained hair and skin; weakness, myalgia, anuria, polyuria; bitter taste, gastrointestinal disturbance; hepatitis, hematuria, albuminuria, nephritis.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.1 mg/m^3 (skin) 0.1 mg/m^3 0.1 mg/m^3 (skin)	0.3 mg/m^3	PEL TLV REL	100 mg/m^3
Polychlorinated biphenyls (PCB) (Aroclor 1242) [53469-21-9] and (Aroclor 1254) [11097-69-1]	?	?	Inh Ing Abs Con	Aroclor 1242: irritated eyes; chloracne; acne-form dermatitis; mildly toxic by ingestion. Poison by subcutaneous route. Carcinogenic. Aroclor 1254: irritated eyes and skin; acne-form dermatitis; poison by intravenous route. Moderately toxic by ingestion and intraperitoneal routes. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	Aroclor 1242: 1 mg/m^3 (skin) 1 mg/m^3 (skin) 0.001 mg/m^3 Aroclor 1254: 0.5 mg/m^3 (skin) 0.5 mg/m^3 (skin) 0.001 mg/m^3		PEL TLV REL PEL TLV REL	Ca [10 mg/m^3] Ca [5 mg/m^3]
Potassium perchlorate [7778-74-7]	?	NA	Abs	Irritated skin, eyes, and mucous membranes. Has been implicated in aplastic anemia. Absorption can cause blood and kidney injury.					

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Propadiene (allene) [463-49-0]	?	?	Inh Con	Health hazards: vapors may cause dizziness or suffocation. Contact will cause severe frostbite. Fire may produce irritating or poisonous gases.	Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.			PEL TLV REL	
Propane [74-98-6]	11.07	16,000–20,000	Inh Con	Dizziness, disorientation, excitation, frostbite.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support	1,000 ppm simple asphyxiant 1,000 ppm		PEL TLV REL	20,000 ppm [LEL]
bis(2-ethylhexyl) phthalate	?	?	Inh Ing Con	Very low toxicity. Injection may cause escape of fluids into the tissues. Slight eye irritation.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	NA Rat LD_{50} = 30.6 mg/kg		PEL TLV REL	?
n-Propyl alcohol (1-propanol) [71-23-8]	10.15	26–200	Inh Abs Ing Con	Mildly irritated eyes, nose, and throat; dry, cracked skin; drowsiness, headache; ataxia, gastrointestinal pain; abdominal cramps; nausea, vomiting, diarrhea.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	200 ppm 200 ppm (skin) 200 ppm (skin)	250 ppm 250 ppm 250 ppm	PEL TLV REL	4,000 ppm
Propylene [115-07-1]	9.73	76		Simple asphyxiant.				PEL TLV REL	
Octagen, see HMX octagen									
Rust inhibitors				No information.				PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Selenium compounds (as Se) [7782-49-2]	?	?	Inh Con Abs Ing	Irritated eyes, nose, and throat, distorted vision, chills, fever, dyspnea; bronchitis; metallic taste, garlic breath; gastrointestinal disturbance; dermitis; skin an eye burns.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	0.2 ppm 0.2 ppm 0.2 ppm		PEL TLV REL	Unknown
Silver (metal) [7440-22-4]	NA	NA	Inh Ing Con	Blue-gray eyes, nasal septum, throat, and skin; irritated skin, ulceration; gastrointestinal disturbance.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	0.01 mg/m^3 0.1 mg/m^3 0.01 mg/m^3		PEL TLV REL	NE
Sodium hydroxide [1310-73-2]	NA	NA	Inh Ing Con	Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C2 mg/m^3 C2 mg/m^3 C2 mg/m^3	PEL TLV REL	250 mg/m^3
Sodium tripolyphosphate (pentasodium tripolyphosphate) [7758-29-4]	?	NA	Inh Abs Con	Can cause catharsis if taken internally in large doses. Ingestion of sodium metal and pyrophosphates can cause intestinal hemorrhaging.	No information available	LD50: 6,500 mg/kg			
Stoddard solvent [8052-41-3]	?	1–30	Inh Con Ing	Irritated eyes, nose, and throat; dizziness; dermatitis.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm 350 mg/m^3	C1,800 mg/m^3	PEL TLV REL	29,500 mg/m^3

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Sulfur dioxide [7446-09-5]	12.3	0.5–5	Inh Con	Irritated eyes, nose, and throat; rhinitis; choking, cough; reflex broncho-constriction; eye, and skin burns.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	5 ppm 5 ppm 5 ppm	PEL TLV REL	100 ppm
Sulfuric acid [7664-93-9]	?	0.15	Inh Ing Con	Irritated eyes, nose, and throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; tracheobronchitis; skin and eye burns; dermatitis.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m^3 1 mg/m^3 1 mg/m^3	3 mg/m^3	PEL TLV REL	80 mg/m^3
Tetrachloroethylene (perchloroethylene) [127-18-4]	9.32	47	Inh Ing Con	Irritates eyes, nose, throat; nausea; flushed face, neck; vertigo, dizziness, incoordination; headache, sleepiness; skin redness; liver damage, suspected human carcinogen.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	25 ppm 50 ppm	200 ppm minimize exposure (LOQ 0.4 ppm)	PEL TLV REL	Ca [500 ppm]
Thorium dioxide (considered carcinogenic by the U.S. National Toxicology Program) [NA]									

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Tin (inorganic compounds, except oxides, as Sn) [7440-31-5]	NA	NA	Inh Con	Irritated eyes and skin	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	2 mg/m3 2 mg/m^3		PEL TLV REL	400 mg/m^3
Titanium dioxide [13463-67-7]	NA	NA	Inh	Slight lung fibrosis; carcinogenic (NIOSH).	Breath: Respiratory support	10 mg/m^3* 10 mg/m^3 *total dust	Ca, lowest feasible concentration (LOQ 0.2 mg/m^3	PEL TLV REL	Ca [NE]
Titanium tetrachloride [7550-45-0]	?	?	Inh	Irritated skin, eyes, and mucous membranes. Poison by inhalation.		NA Inh Rate—LC_{50}: 460 mg/m^3			
Toluene [108-88-3]	8.82	0.16–37	Inh Abs Ing Con	Fatigue, weakness; confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; nervousness, muscular fatigue, insomnia; paralysis; dermatitis.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 50 ppm (skin) 100 ppm	150 ppm 150 ppm	PEL TLV REL	2,000 ppm
1,3,5-Triamino-2,4,6-trinitrobenzene (TATB)—high explosive [3058-38-6]	NA	?	Inh Ing	Mild transient eye irritation; lung congestion in animals at high doses; not expected to cause physiological impairment at low concentration; treat as nuisance dust per ACGIH TLV Committee.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	NA LD_{50} Oral-Mouse: >5 mg/kg		PEL TLV REL	?

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Trichloroacetic acid (TCA) [76-03-9]	NA	NA	Inh Abs Con	Irritated skin, eyes, and mucous membranes	Eyes: Irrigate immediately (15 min) Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	1 ppm 1 ppm 1 ppm		PEL TLV REL	
1,1,1-Trichloroethane (methyl chloroform) [71-55-6]	11.0	390	Inh Ing Con	Headache, lassitude; central nervous system depression, poor equilibrium; irritated eyes; dermatitis; cardiac arrhythmia.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	350 ppm 350 ppm	450 ppm 450 ppm C350 ppm	PEL TLV REL	1,000 ppm
Trichloroethene, see Trichloroethylene									
Trichloroethylene (TCE, trichloroethene) [79-01-6]	9.45	21.4	Inh Ing Con	Headache, vertigo; visual disturbance, tremors, somnolence, nausea, vomiting; irritated eyes; dermatitis; cardiac arrhythmia, paresthesia. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	50 ppm 50 ppm 25 ppm	200 ppm 200 ppm Ca	PEL TLV REL	Ca [1,000 ppm]
Trichlorofluoro-methane (Freon-11) (CCl_3F) [75-69-4]	11.77	?	Inh Ing Con	Incoordination, tremors; dermatitis; frostbite; cardiac arrhythmia, cardiac arrest.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention		C1,000 ppm C1,000 ppm C1,000 ppm	PEL TLV REL	10,000 ppm
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113) (CCl_2FCClF_2) [76-13-1]	11.99	0.5–200	Inh Ing Con	Irritated throat, drowsiness, dermatitis; in animals: cardiac arrhythmia.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	1,000 ppm 1,000 ppm 1,000 ppm	1,250 ppm 1,250 ppm 1,250 ppm	PEL TLV REL	4,500 ppm

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
2,4,6-Trinitrotoluene (TNT) [118-96-7]	10.59	?	Inh Abs Ing Con	Liver damage, jaundice; cyanosis; sneezing coughing, sore throat; peripheral neuropathy, muscular pain; kidney damage; cataract; sensitive dermatitis; leukocytosis; anemia; cardiac irregularities.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m^3 (skin) 0.5 mg/m^3 (skin) 0.5 mg/m^3 (skin)		PEL TLV REL	NE
N-nitrosodi-phenylamine	?	?	Inh Ing Con	Very low toxicity. No evidence of carcinogenicity.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	NA Rat LD_{50} = 1,650 mg/kg		PEL TLV REL	?
Uranium (insoluble compounds as U) (metal) [7440-61-1]	NA	NA	Inh Con Ing	Dermatitis in animals: lung, lymph node damage; dermatitis. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.2 mg/m^3 0.2 mg/m^3 0.2 mg/m^3	0.6 mg/m^3 0.6 mg/m^3 0.6 mg/m^3	PEL TLV REL	Ca [30 mg/m^3]
Uranium (soluble compounds as U)	NA	NA	Inh Con Ing	Lacrimation, conjunctivitis; shortness of breath, coughing and chest rales; nausea, vomiting; skin burns; red blood cell, casts in urine; albuminuria; high blood urea nitrogen. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m^3 0.2 mg/m^3 0.05 mg/m^3	0.6 mg/m^3	PEL TLV REL	Ca [20 mg/m^3]
Vacuum grease				Not specific—no information.				PEL TLV REL	
Volatile organic compounds (VOC)				Not specific—no information.				PEL TLV REL	

Refer to footnotes at end of table.

Chemical Exposure Information

Substance [CAS]	IP[a] (eV)	Odor Threshold (ppm)	Route[b]	Symptoms of Exposure	Treatment	TWA[c]	STEL[d]	Source[e]	IDLH (NIOSH)[f]
Xylene (o-, m-, and p-isomers) [1330-20-7;95-47-6; 108-38-3;106-42-3]	8.56/ 8.56/ 8.44	1.1–20	Inh Abs Ing Con	Dizziness, excitement, drowsiness, incoordination, staggering gait; irritated eyes, nose, throat; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm 100 ppm	150 ppm 150 ppm 150 ppm	PEL TLV REL	1,000 ppm
Zinc (as oxide fume) [1314-13-2]	NA	NA	Inh	Sweet metallic taste; dry throat, cough, chills, fever; tight chest, dyspnea, rales, reduced pulmonary function; headache; blurred vision; muscular cramps, low back pain; nausea, vomiting; fatigue, lassitude, malaise.	Breath: Respiratory support	5 mg/m^3 5 mg/m^3 5 mg/m^3	10 mg/m^3 10 mg/m^3 10 mg/m^3	PEL TLV REL	NE
Zirconium compounds (metal) [7440-67-7]	NA	?	Inh Con	Skin granulomas; in animals: X-ray evidence of retention in lungs; irritated skin, mucous membranes.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m^3 5 mg/m^3 5 mg/m^3	10 mg/m^3 10 mg/m^3 10 mg/m^3	PEL TLV PEL	500 mg/m^3

[a]IP = Ionization potential (electron volts).
[b]Route = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.
[c]TWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.
[d]STEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.
[e]PEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).
TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.
REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.
[f]IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 90-117, 1990).

Chemical Exposure Information

C = Ceiling limit value which should not be exceeded at any time.
Ca = Carcinogen.
NA = Not applicable.
? = Unknown.
LEL = Lower explosive limits.
LC_{50} = Lethal concentration for 50 percent of population tested.
LD_{50} = Lethal dose for 50 percent of population tested.
NIC = Notice of intended change (ACGIH).

References:

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Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.
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Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.
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Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.
Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.
Verschuseren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.
Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.
Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

TABLES

Table 1
PPE Selection Matrix

	Litmus Paper	Contaminant Contact Potential
Level D	pH > 12 pH < 2	Residual of acid/base neutralization contact unlikely.

APPENDIX D

ANALYTICAL LABORATORY REPORTS

ATTACHMENT 1

ANALYTICAL RESULTS FOR SAMPLES FROM STEP 1—FIRST INTERNAL ALCONOX SOLUTION RECIRCULATION AND STEP 2—SECOND INTERNAL ALCONOX SOLUTION RECIRCULATION

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Jerry Fuller CST-7 DATE:

ORIGIN OF SAMPLE(S) MISC

94.75060

DATE SAMPLED 2/4/94

DESCRIPTION: BWTU 1-4-CS #7. 1-4-CD

Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY	Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY
Cd	< 0.04 mg/L		ETVAA	MBG	As	9.0 ± 20 µg/L		ETVAA	MBG
Cr	< 0.35 mg/L		ETVAA	MBG	Se	< 2.0 µg/L		ETVAA	MBG
Ag	< 0.01 mg/L		FAA	MBG	Ba	< 0.10 mg/L		FAA	MBG
Pb	< 0.50 mg/L		ETVAA	MBG					
Hg	< 0.20 mg/L		CVAA	PEC					

REMARKS:

APPROVED: Daniel Geeth DATE: 3/18/94
Chief Chemist Lab Copy

H7-LAB-35A

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Jerry Fuller CST-7 DATE:

ORIGIN OF SAMPLE(S) MISC

94.75061

DATE SAMPLED 2/7/94

DESCRIPTION: BWTU 1-4DS

Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY	Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY
Cd	< 0.04 mg/L		ETVAA	MBG	As	13 ± 2 µg/L		ETVAA	MBG
Cr	~~< 0.35 mg/L~~ 0.38 ± 0.35 mg/L		"	MBG	Se	8 ± 2 µg/L		"	MBG
Ag	< 0.01 mg/L		FAA	MBG	Ba	< 0.10 mg/L		FAA	MBG
Pb	< 0.50 mg/L		ETVAA	MBG					
Hg	85 ± 9 µg/L		CVAA	PEC					

REMARKS:

APPROVED: Daniel Geeth DATE: 3/18/94
Chief Chemist Lab Copy

H7-LAB-35A

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Jerry Fuller CST-7 DATE:

ORIGIN OF SAMPLE(S) MISC

94.75062

DATE SAMPLED 2/8/94

DESCRIPTION: BWTU 2-4CS

Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY	Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY
Cd	< 0.04 mg/L		ETAAA	MBG	As	6 ± 2 µg/L		ETAAA	MBG
Cu	< 0.35 mg/L		"	MBG	Se	< 2.0 µg/L		"	MBG
Ag	< 0.01 mg/L		FAA	MBG	Ba	< 0.10 mg/L		FAA	MBG
Pb	< 0.50 mg/L		ETAAA	MBG					
Hg	< 0.20 µg/L		CVAA	PEC					

REMARKS: 0

APPROVED: Daniel J. Gurth Chief Chemist DATE: 3/18/94 Lab Copy

H7-LAB-35A

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Jerry Fuller CST-7 DATE:

ORIGIN OF SAMPLE(S) MISC

94.75063

DATE SAMPLED 2/8/94

DESCRIPTION: BWTU 2-4DS

Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY	Test/Analysis	Result/Conc	DATE BEGUN	METHOD	ANALYZED BY
Cd	< 0.04 mg/L		ETAAA	MBG	As	8 ± 2 µg/L		ETAAA	MBG
Cu	< 0.35 mg/L		"	MBG	Se	< 2.0 µg/L		"	MBG
Ag	0.04 ± 0.01 mg/L		FAA	MBG	Ba	< 0.10 mg/L		FAA	MBG
Pb	< 0.50 mg/L		ETAAA	MBG					
Hg	32 ± 3 µg/L		CVAA	PEC					

REMARKS:

APPROVED: Daniel J. Gurth Chief Chemist DATE: 3/18/94 Lab Copy

H7-LAB-35A

SAMPLE SUBMITTED BY: Jerry Freer DATE: 2-9-94

ORIGIN OF SAMPLE(S) 94-75042

DATE SAMPLED	DATE BEGUN	METHOD	ANALYZED BY	DESCRIPTION BWTU-2-5-CS water soln. containing ~1% Alconox	DATE BEGUN	METHOD	ANALYZED BY

Test/Analysis	Result/Conc				Test/Analysis	Result/Conc			
Cyanide	.01 ± .01 mg/l	2/11	335.3	2mlV					

REMARKS:

APPROVED: _____ DATE: _____
Chief Chemist Lab Copy

H7-LAB-35A

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Jerry Freer DATE: 2-7-94

ORIGIN OF SAMPLE(S) 94.75041

DATE SAMPLED 2-7-94	DATE BEGUN	METHOD	ANALYZED BY	DESCRIPTION 1-5-BWTU-[redacted]-DS	DATE BEGUN	METHOD	ANALYZED BY

Test/Analysis	Result/Conc				Test/Analysis	Result/Conc			
Cyanide	.078 ± .01 mg/l	2/11	335.3	2mlV					
pH	9.4 ± .1								

REMARKS:

APPROVED: _____ DATE: _____
Chief Chemist Lab Copy

H7-LAB-35A

LABORATORY ANALYSIS

SAMPLE SUBMITTED BY: Jerry Freer DATE: 2/4/94

ORIGIN OF SAMPLE(S) BWTU

DATE SAMPLED 2/4/94

DATE BEGUN	METHOD	ANALYZED BY	DESCRIPTION	DATE BEGUN	METHOD	ANALYZED BY
			BWTU-1-5-CSB			
			BWTU-1-5-CSA			
			BWTU-1-1-CS - 94-75040			

Test/Analysis	Result/Conc				Test/Analysis	Result/Conc			
Cyanide CSB	.01 ± .01 mg/l	2/11	335.3	Emit					
Cyanide CSA	.01 ± .01 mg/l	2/11	335.3	Emit					
BWTU-1-1-CS	9.45 ± 0.1	2/4	150.1	Emit					

REMARKS:

94-75038-A

H7-LAB-35A

APPROVED: _____ Chief Chemist DATE: _____ Lab Copy

94-75039-B

LABORATORY ANALYSES

SAMPLE SUBMITTED BY: Jerry Freer DATE: 2-8-94

ORIGIN OF SAMPLE(S) 94-75043

DATE SAMPLED

DATE BEGUN	METHOD	ANALYZED BY	DESCRIPTION	DATE BEGUN	METHOD	ANALYZED BY
			BWTU-2-5-DS			

Test/Analysis	Result/Conc				Test/Analysis	Result/Conc			
Cyanide Analysis	.03 ± .01 mg/l	2/11	335.3	Emit					

REMARKS:

H7-LAB-35A

APPROVED: _____ Chief Chemist DATE: _____ Lab Copy

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LCO on 4-Mar-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: M36A NOTEBOOK: R7710 PAGE: 293

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02142 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/07/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-CS	94.02142	83329	< 10.		UG/L	3/04/94		Acenaphthene
BWTU-1-2-CS	94.02142	208968	< 10.		UG/L	3/04/94		Acenaphthylene
BWTU-1-2-CS	94.02142	62533	< 10.		UG/L	3/04/94		Aniline
BWTU-1-2-CS	94.02142	120127	< 10.		UG/L	3/04/94		Anthracene
BWTU-1-2-CS	94.02142	103333	< 10.		UG/L	3/04/94		Azobenzene
BWTU-1-2-CS	94.02142	92875	< 10.		UG/L	3/04/94		m-Benzidine
BWTU-1-2-CS	94.02142	56553	< 10.		UG/L	3/04/94		Benzo[a]anthracene
BWTU-1-2-CS	94.02142	50328	< 10.		UG/L	3/04/94		Benzo[a]pyrene
BWTU-1-2-CS	94.02142	205992	< 10.		UG/L	3/04/94		Benzo[b]fluoranthene
BWTU-1-2-CS	94.02142	191242	< 10.		UG/L	3/04/94		Benzo[g,h,i]perylene
BWTU-1-2-CS	94.02142	207089	< 10.		UG/L	3/04/94		Benzo[k]fluoranthene
BWTU-1-2-CS	94.02142	65850	< 10.		UG/L	3/04/94		Benzoic acid
BWTU-1-2-CS	94.02142	100516	< 10.		UG/L	3/04/94		Benzyl alcohol
BWTU-1-2-CS	94.02142	111911	< 10.		UG/L	3/04/94		Bis(2-chloroethoxy)methane
BWTU-1-2-CS	94.02142	111444	< 10.		UG/L	3/04/94		Bis(2-chloroethyl)ether
BWTU-1-2-CS	94.02142	108601	< 10.		UG/L	3/04/94		Bis(2-chloroisopropyl)ether
BWTU-1-2-CS	94.02142	117817	< 10.		UG/L	3/04/94		Bis(2-ethylhexyl)phthalate
BWTU-1-2-CS	94.02142	101553	< 10.		UG/L	3/04/94		4-Bromophenylphenyl ether
BWTU-1-2-CS	94.02142	85687	< 10.		UG/L	3/04/94		Butyl benzyl phthalate
BWTU-1-2-CS	94.02142	59507	< 10.		UG/L	3/04/94		4-Chloro-3-methylphenol
BWTU-1-2-CS	94.02142	106478	< 10.		UG/L	3/04/94		4-Chloroaniline
BWTU-1-2-CS	94.02142	91587	< 10.		UG/L	3/04/94		2-Chloronaphthalene
BWTU-1-2-CS	94.02142	95578	< 10.		UG/L	3/04/94		o-Chlorophenol
BWTU-1-2-CS	94.02142	7005723	< 10.		UG/L	3/04/94		4-Chlorophenylphenyl ether
BWTU-1-2-CS	94.02142	218019	< 10.		UG/L	3/04/94		Chrysene
BWTU-1-2-CS	94.02142	84742	< 10.		UG/L	3/04/94		Di-n-butyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-CS	94.02142	117840	< 10.		UG/L	3/04/94		Di-n-octyl phthalate
BWTU-1-2-CS	94.02142	53703	< 10.		UG/L	3/04/94		Dibenzo[a,h]anthracene
BWTU-1-2-CS	94.02142	132649	< 10.		UG/L	3/04/94		Dibenzofuran
BWTU-1-2-CS	94.02142	95501	< 10.		UG/L	3/04/94		o-Dichlorobenzene (1,2)
BWTU-1-2-CS	94.02142	541731	< 10.		UG/L	3/04/94		m-Dichlorobenzene (1,3)
BWTU-1-2-CS	94.02142	106467	< 10.		UG/L	3/04/94		p-Dichlorobenzene (1,4)
BWTU-1-2-CS	94.02142	91941	< 10.		UG/L	3/04/94		3,3'-Dichlorobenzidine
BWTU-1-2-CS	94.02142	120832	< 10.		UG/L	3/04/94		2,4-Dichlorophenol
BWTU-1-2-CS	94.02142	84662	< 10.		UG/L	3/04/94		Diethyl phthalate
BWTU-1-2-CS	94.02142	131113	< 10.		UG/L	3/04/94		Dimethyl phthalate
BWTU-1-2-CS	94.02142	105679	< 10.		UG/L	3/04/94		2,4-Dimethylphenol
BWTU-1-2-CS	94.02142	51285	< 10.		UG/L	3/04/94		2,4-Dinitrophenol
BWTU-1-2-CS	94.02142	121142	< 10.		UG/L	3/04/94		2,4-Dinitrotoluene
BWTU-1-2-CS	94.02142	606202	< 10.		UG/L	3/04/94		2,6-Dinitrotoluene
BWTU-1-2-CS	94.02142	206440	< 10.		UG/L	3/04/94		Fluoranthene
BWTU-1-2-CS	94.02142	86737	< 10.		UG/L	3/04/94		Fluorene
BWTU-1-2-CS	94.02142	118741	< 10.		UG/L	3/04/94		Hexachlorobenzene
BWTU-1-2-CS	94.02142	87683	< 10.		UG/L	3/04/94		Hexachlorobutadiene
BWTU-1-2-CS	94.02142	77474	< 10.		UG/L	3/04/94		Hexachlorocyclopentadiene
BWTU-1-2-CS	94.02142	67721	< 10.		UG/L	3/04/94		Hexachloroethane
BWTU-1-2-CS	94.02142	193395	< 10.		UG/L	3/04/94		Indeno[1,2,3-cd]pyrene
BWTU-1-2-CS	94.02142	78591	< 10.		UG/L	3/04/94		Isophorone
BWTU-1-2-CS	94.02142	534521	< 10.		UG/L	3/04/94		2-Methyl-4,6-dinitrophenol
BWTU-1-2-CS	94.02142	91576	< 10.		UG/L	3/04/94		2-Methylnaphthalene
BWTU-1-2-CS	94.02142	95487	< 10.		UG/L	3/04/94		2-Methylphenol
BWTU-1-2-CS	94.02142	106445	< 10.		UG/L	3/04/94		4-Methylphenol
BWTU-1-2-CS	94.02142	91203	< 10.		UG/L	3/04/94		Naphthalene
BWTU-1-2-CS	94.02142	88744	< 10.		UG/L	3/04/94		2-Nitroaniline
BWTU-1-2-CS	94.02142	99092	< 10.		UG/L	3/04/94		3-Nitroaniline
BWTU-1-2-CS	94.02142	100016	< 10.		UG/L	3/04/94		4-Nitroaniline
BWTU-1-2-CS	94.02142	98953	< 10.		UG/L	3/04/94		Nitrobenzene
BWTU-1-2-CS	94.02142	88755	< 10.		UG/L	3/04/94		2-Nitrophenol
BWTU-1-2-CS	94.02142	100027	< 10.		UG/L	3/04/94		4-Nitrophenol
BWTU-1-2-CS	94.02142	621647	< 10.		UG/L	3/04/94		N-Nitrosodi-n-propylamine
BWTU-1-2-CS	94.02142	62759	< 10.		UG/L	3/04/94		N-Nitrosodimethylamine
BWTU-1-2-CS	94.02142	86306	< 10.		UG/L	3/04/94		N-Nitrosodiphenylamine

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-CS	94.02142	87865	< 10.		UG/L	3/04/94		Pentachlorophenol
BWTU-1-2-CS	94.02142	85018	< 10.		UG/L	3/04/94		Phenanthrene
BWTU-1-2-CS	94.02142	108952	< 10.		UG/L	3/04/94		Phenol
BWTU-1-2-CS	94.02142	129000	< 10.		UG/L	3/04/94		Pyrene
BWTU-1-2-CS	94.02142	120821	< 10.		UG/L	3/04/94		1,2,4-Trichlorobenzene
BWTU-1-2-CS	94.02142	95954	< 10.		UG/L	3/04/94		2,4,5-Trichlorophenol
BWTU-1-2-CS	94.02142	88062	< 10.		UG/L	3/04/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.02142

none

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LCO on 4-Mar-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: M36A NOTEBOOK: R7710 PAGE: 293

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02161 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/08/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-2-CS	94.02161	83329	< 10.		UG/L	3/04/94		Acenaphthene
BWTU-2-2-CS	94.02161	208968	< 10.		UG/L	3/04/94		Acenaphthylene
BWTU-2-2-CS	94.02161	62533	< 10.		UG/L	3/04/94		Aniline
BWTU-2-2-CS	94.02161	120127	< 10.		UG/L	3/04/94		Anthracene
BWTU-2-2-CS	94.02161	103333	< 10.		UG/L	3/04/94		Azobenzene
BWTU-2-2-CS	94.02161	92875	< 10.		UG/L	3/04/94		m-Benzidine
BWTU-2-2-CS	94.02161	56553	< 10.		UG/L	3/04/94		Benzo[a]anthracene
BWTU-2-2-CS	94.02161	50328	< 10.		UG/L	3/04/94		Benzo[a]pyrene
BWTU-2-2-CS	94.02161	205992	< 10.		UG/L	3/04/94		Benzo[b]fluoranthene
BWTU-2-2-CS	94.02161	191242	< 10.		UG/L	3/04/94		Benzo[g,h,i]perylene
BWTU-2-2-CS	94.02161	207089	< 10.		UG/L	3/04/94		Benzo[k]fluoranthene
BWTU-2-2-CS	94.02161	65850	< 10.		UG/L	3/04/94		Benzoic acid
BWTU-2-2-CS	94.02161	100516	< 10.		UG/L	3/04/94		Benzyl alcohol
BWTU-2-2-CS	94.02161	111911	< 10.		UG/L	3/04/94		Bis(2-chloroethoxy)methane
BWTU-2-2-CS	94.02161	111444	< 10.		UG/L	3/04/94		Bis(2-chloroethyl)ether
BWTU-2-2-CS	94.02161	108601	< 10.		UG/L	3/04/94		Bis(2-chloroisopropyl)ether
BWTU-2-2-CS	94.02161	117817	12.	3.6	UG/L	3/04/94		Bis(2-ethylhexyl)phthalate
BWTU-2-2-CS	94.02161	101553	< 10.		UG/L	3/04/94		4-Bromophenylphenyl ether
BWTU-2-2-CS	94.02161	85687	< 10.		UG/L	3/04/94		Butyl benzyl phthalate
BWTU-2-2-CS	94.02161	59507	< 10.		UG/L	3/04/94		4-Chloro-3-methylphenol
BWTU-2-2-CS	94.02161	106478	< 10.		UG/L	3/04/94		4-Chloroaniline
BWTU-2-2-CS	94.02161	91587	< 10.		UG/L	3/04/94		2-Chloronaphthalene
BWTU-2-2-CS	94.02161	95578	< 10.		UG/L	3/04/94		o-Chlorophenol
BWTU-2-2-CS	94.02161	7005723	< 10.		UG/L	3/04/94		4-Chlorophenylphenyl ether
BWTU-2-2-CS	94.02161	218019	< 10.		UG/L	3/04/94		Chrysene
BWTU-2-2-	94.02161	84742	< 10.		UG/L	04/94		Di-n-butyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-2-CS	94.02161	117840	< 10.		UG/L	3/04/94		Di-n-octyl phthalate
BWTU-2-2-CS	94.02161	53703	< 10.		UG/L	3/04/94		Dibenzo[a,h]anthracene
BWTU-2-2-CS	94.02161	132649	< 10.		UG/L	3/04/94		Dibenzofuran
BWTU-2-2-CS	94.02161	95501	< 10.		UG/L	3/04/94		o-Dichlorobenzene (1,2)
BWTU-2-2-CS	94.02161	541731	< 10.		UG/L	3/04/94		m-Dichlorobenzene (1,3)
BWTU-2-2-CS	94.02161	106467	< 10.		UG/L	3/04/94		p-Dichlorobenzene (1,4)
BWTU-2-2-CS	94.02161	91941	< 10.		UG/L	3/04/94		3,3'-Dichlorobenzidine
BWTU-2-2-CS	94.02161	120832	< 10.		UG/L	3/04/94		2,4-Dichlorophenol
BWTU-2-2-CS	94.02161	84662	< 10.		UG/L	3/04/94		Diethyl phthalate
BWTU-2-2-CS	94.02161	131113	140.	42.	UG/L	3/04/94		Dimethyl phthalate
BWTU-2-2-CS	94.02161	105679	< 10.		UG/L	3/04/94		2,4-Dimethylphenol
BWTU-2-2-CS	94.02161	51285	< 10.		UG/L	3/04/94		2,4-Dinitrophenol
BWTU-2-2-CS	94.02161	121142	< 10.		UG/L	3/04/94		2,4-Dinitrotoluene
BWTU-2-2-CS	94.02161	606202	< 10.		UG/L	3/04/94		2,6-Dinitrotoluene
BWTU-2-2-CS	94.02161	206440	< 10.		UG/L	3/04/94		Fluoranthene
BWTU-2-2-CS	94.02161	86737	< 10.		UG/L	3/04/94		Fluorene
BWTU-2-2-CS	94.02161	118741	< 10.		UG/L	3/04/94		Hexachlorobenzene
BWTU-2-2-CS	94.02161	87683	< 10.		UG/L	3/04/94		Hexachlorobutadiene
BWTU-2-2-CS	94.02161	77474	< 10.		UG/L	3/04/94		Hexachlorocyclopentadiene
BWTU-2-2-CS	94.02161	67721	< 10.		UG/L	3/04/94		Hexachloroethane
BWTU-2-2-CS	94.02161	193395	< 10.		UG/L	3/04/94		Indeno[1,2,3-cd]pyrene
BWTU-2-2-CS	94.02161	78591	< 10.		UG/L	3/04/94		Isophorone
BWTU-2-2-CS	94.02161	534521	< 10.		UG/L	3/04/94		2-Methyl-4,6-dinitrophenol
BWTU-2-2-CS	94.02161	91576	< 10.		UG/L	3/04/94		2-Methylnaphthalene
BWTU-2-2-CS	94.02161	95487	< 10.		UG/L	3/04/94		2-Methylphenol
BWTU-2-2-CS	94.02161	106445	< 10.		UG/L	3/04/94		4-Methylphenol
BWTU-2-2-CS	94.02161	91203	< 10.		UG/L	3/04/94		Naphthalene
BWTU-2-2-CS	94.02161	88744	< 10.		UG/L	3/04/94		2-Nitroaniline
BWTU-2-2-CS	94.02161	99092	< 10.		UG/L	3/04/94		3-Nitroaniline
BWTU-2-2-CS	94.02161	100016	< 10.		UG/L	3/04/94		4-Nitroaniline
BWTU-2-2-CS	94.02161	98953	< 10.		UG/L	3/04/94		Nitrobenzene
BWTU-2-2-CS	94.02161	88755	< 10.		UG/L	3/04/94		2-Nitrophenol
BWTU-2-2-CS	94.02161	100027	< 10.		UG/L	3/04/94		4-Nitrophenol
BWTU-2-2-CS	94.02161	621647	< 10.		UG/L	3/04/94		N-Nitrosodi-n-propylamine
BWTU-2-2-CS	94.02161	62759	< 10.		UG/L	3/04/94		N-Nitrosodimethylamine
BWTU-2-2	94.02161	86306	< 10.		UG/L	04/94		N-Nitrosodiphenylamine

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-2-CS	94.02161	87865	< 10.		UG/L	3/04/94		Pentachlorophenol
BWTU-2-2-CS	94.02161	85018	< 10.		UG/L	3/04/94		Phenanthrene
BWTU-2-2-CS	94.02161	108952	< 10.		UG/L	3/04/94		Phenol
BWTU-2-2-CS	94.02161	129000	< 10.		UG/L	3/04/94		Pyrene
BWTU-2-2-CS	94.02161	120821	< 10.		UG/L	3/04/94		1,2,4-Trichlorobenzene
BWTU-2-2-CS	94.02161	95954	< 10.		UG/L	3/04/94		2,4,5-Trichlorophenol
BWTU-2-2-CS	94.02161	88062	< 10.		UG/L	3/04/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.02161

none

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LCO on 4-Mar-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: M36A NOTEBOOK: R7710 PAGE: 293

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02163 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/08/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-DS	94.02163	83329	< 10.		UG/L	3/04/94		Acenaphthene
BWTU-1-2-DS	94.02163	208968	< 10.		UG/L	3/04/94		Acenaphthylene
BWTU-1-2-DS	94.02163	62533	< 10.		UG/L	3/04/94		Aniline
BWTU-1-2-DS	94.02163	120127	< 10.		UG/L	3/04/94		Anthracene
BWTU-1-2-DS	94.02163	103333	< 10.		UG/L	3/04/94		Azobenzene
BWTU-1-2-DS	94.02163	92875	< 10.		UG/L	3/04/94		m-Benzidine
BWTU-1-2-DS	94.02163	56553	< 10.		UG/L	3/04/94		Benzo[a]anthracene
BWTU-1-2-DS	94.02163	50328	< 10.		UG/L	3/04/94		Benzo[a]pyrene
BWTU-1-2-DS	94.02163	205992	< 10.		UG/L	3/04/94		Benzo[b]fluoranthene
BWTU-1-2-DS	94.02163	191242	< 10.		UG/L	3/04/94		Benzo[g,h,i]perylene
BWTU-1-2-DS	94.02163	207089	< 10.		UG/L	3/04/94		Benzo[k]fluoranthene
BWTU-1-2-DS	94.02163	65850	< 10.		UG/L	3/04/94		Benzoic acid
BWTU-1-2-DS	94.02163	100516	< 10.		UG/L	3/04/94		Benzyl alcohol
BWTU-1-2-DS	94.02163	111911	< 10.		UG/L	3/04/94		Bis(2-chloroethoxy)methane
BWTU-1-2-DS	94.02163	111444	< 10.		UG/L	3/04/94		Bis(2-chloroethyl)ether
BWTU-1-2-DS	94.02163	108601	< 10.		UG/L	3/04/94		Bis(2-chloroisopropyl)ether
BWTU-1-2-DS	94.02163	117817	< 10.		UG/L	3/04/94		Bis(2-ethylhexyl)phthalate
BWTU-1-2-DS	94.02163	101553	< 10.		UG/L	3/04/94		4-Bromophenylphenyl ether
BWTU-1-2-DS	94.02163	85687	< 10.		UG/L	3/04/94		Butyl benzyl phthalate
BWTU-1-2-DS	94.02163	59507	< 10.		UG/L	3/04/94		4-Chloro-3-methylphenol
BWTU-1-2-DS	94.02163	106478	< 10.		UG/L	3/04/94		4-Chloroaniline
BWTU-1-2-DS	94.02163	91587	< 10.		UG/L	3/04/94		2-Chloronaphthalene
BWTU-1-2-DS	94.02163	95578	< 10.		UG/L	3/04/94		o-Chlorophenol
BWTU-1-2-DS	94.02163	7005723	< 10.		UG/L	3/04/94		4-Chlorophenylphenyl ether
BWTU-1-2-DS	94.02163	218019	< 10.		UG/L	3/04/94		Chrysene
BWTU-1-2-DS	94.02163	84742	< 10.		UG/L	3/04/94		Di-n-butyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-DS	94.02163	117840	< 10.		UG/L	3/04/94		Di-n-octyl phthalate
BWTU-1-2-DS	94.02163	53703	< 10.		UG/L	3/04/94		Dibenzo[a,h]anthracene
BWTU-1-2-DS	94.02163	132649	< 10.		UG/L	3/04/94		Dibenzofuran
BWTU-1-2-DS	94.02163	95501	< 10.		UG/L	3/04/94		o-Dichlorobenzene (1,2)
BWTU-1-2-DS	94.02163	541731	< 10.		UG/L	3/04/94		m-Dichlorobenzene (1,3)
BWTU-1-2-DS	94.02163	106467	< 10.		UG/L	3/04/94		p-Dichlorobenzene (1,4)
BWTU-1-2-DS	94.02163	91941	< 10.		UG/L	3/04/94		3,3'-Dichlorobenzidine
BWTU-1-2-DS	94.02163	120832	< 10.		UG/L	3/04/94		2,4-Dichlorophenol
BWTU-1-2-DS	94.02163	84662	< 10.		UG/L	3/04/94		Diethyl phthalate
BWTU-1-2-DS	94.02163	131113	< 10.		UG/L	3/04/94		Dimethyl phthalate
BWTU-1-2-DS	94.02163	105679	< 10.		UG/L	3/04/94		2,4-Dimethylphenol
BWTU-1-2-DS	94.02163	51285	< 10.		UG/L	3/04/94		2,4-Dinitrophenol
BWTU-1-2-DS	94.02163	121142	< 10.		UG/L	3/04/94		2,4-Dinitrotoluene
BWTU-1-2-DS	94.02163	606202	< 10.		UG/L	3/04/94		2,6-Dinitrotoluene
BWTU-1-2-DS	94.02163	206440	< 10.		UG/L	3/04/94		Fluoranthene
BWTU-1-2-DS	94.02163	86737	< 10.		UG/L	3/04/94		Fluorene
BWTU-1-2-DS	94.02163	118741	< 10.		UG/L	3/04/94		Hexachlorobenzene
BWTU-1-2-DS	94.02163	87683	< 10.		UG/L	3/04/94		Hexachlorobutadiene
BWTU-1-2-DS	94.02163	77474	< 10.		UG/L	3/04/94		Hexachlorocyclopentadiene
BWTU-1-2-DS	94.02163	67721	< 10.		UG/L	3/04/94		Hexachloroethane
BWTU-1-2-DS	94.02163	193395	< 10.		UG/L	3/04/94		Indeno[1,2,3-cd]pyrene
BWTU-1-2-DS	94.02163	78591	< 10.		UG/L	3/04/94		Isophorone
BWTU-1-2-DS	94.02163	534521	< 10.		UG/L	3/04/94		2-Methyl-4,6-dinitrophenol
BWTU-1-2-DS	94.02163	91576	< 10.		UG/L	3/04/94		2-Methylnaphthalene
BWTU-1-2-DS	94.02163	95487	< 10.		UG/L	3/04/94		2-Methylphenol
BWTU-1-2-DS	94.02163	106445	< 10.		UG/L	3/04/94		4-Methylphenol
BWTU-1-2-DS	94.02163	91203	< 10.		UG/L	3/04/94		Naphthalene
BWTU-1-2-DS	94.02163	88744	< 10.		UG/L	3/04/94		2-Nitroaniline
BWTU-1-2-DS	94.02163	99092	< 10.		UG/L	3/04/94		3-Nitroaniline
BWTU-1-2-DS	94.02163	100016	< 10.		UG/L	3/04/94		4-Nitroaniline
BWTU-1-2-DS	94.02163	98953	< 10.		UG/L	3/04/94		Nitrobenzene
BWTU-1-2-DS	94.02163	88755	< 10.		UG/L	3/04/94		2-Nitrophenol
BWTU-1-2-DS	94.02163	100027	< 10.		UG/L	3/04/94		4-Nitrophenol
BWTU-1-2-DS	94.02163	621647	< 10.		UG/L	3/04/94		N-Nitrosodi-n-propylamine
BWTU-1-2-DS	94.02163	62759	< 10.		UG/L	3/04/94		N-Nitrosodimethylamine
BWTU-1-2-DS	94.02163	86306	< 10.		UG/L	3/04/94		N-Nitrosodiphenylamine

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-DS	94.02163	87865	< 10.		UG/L	3/04/94		Pentachlorophenol
BWTU-1-2-DS	94.02163	85018	< 10.		UG/L	3/04/94		Phenanthrene
BWTU-1-2-DS	94.02163	108952	< 10.		UG/L	3/04/94		Phenol
BWTU-1-2-DS	94.02163	129000	< 10.		UG/L	3/04/94		Pyrene
BWTU-1-2-DS	94.02163	120821	< 10.		UG/L	3/04/94		1,2,4-Trichlorobenzene
BWTU-1-2-DS	94.02163	95954	< 10.		UG/L	3/04/94		2,4,5-Trichlorophenol
BWTU-1-2-DS	94.02163	88062	< 10.		UG/L	3/04/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.02163

none

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LCO on 4-Mar-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: M36A NOTEBOOK: R7710 PAGE: 293

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02165 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/08/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-2-DS	94.02165	83329	< 10.		UG/L	3/04/94		Acenaphthene
BWTU-2-2-DS	94.02165	208968	< 10.		UG/L	3/04/94		Acenaphthylene
BWTU-2-2-DS	94.02165	62533	< 10.		UG/L	3/04/94		Aniline
BWTU-2-2-DS	94.02165	120127	< 10.		UG/L	3/04/94		Anthracene
BWTU-2-2-DS	94.02165	103333	< 10.		UG/L	3/04/94		Azobenzene
BWTU-2-2-DS	94.02165	92875	< 10.		UG/L	3/04/94		m-Benzidine
BWTU-2-2-DS	94.02165	56553	< 10.		UG/L	3/04/94		Benzo[a]anthracene
BWTU-2-2-DS	94.02165	50328	< 10.		UG/L	3/04/94		Benzo[a]pyrene
BWTU-2-2-DS	94.02165	205992	< 10.		UG/L	3/04/94		Benzo[b]fluoranthene
BWTU-2-2-DS	94.02165	191242	< 10.		UG/L	3/04/94		Benzo[g,h,i]perylene
BWTU-2-2-DS	94.02165	207089	< 10.		UG/L	3/04/94		Benzo[k]fluoranthene
BWTU-2-2-DS	94.02165	65850	< 10.		UG/L	3/04/94		Benzoic acid
BWTU-2-2-DS	94.02165	100516	< 10.		UG/L	3/04/94		Benzyl alcohol
BWTU-2-2-DS	94.02165	111911	< 10.		UG/L	3/04/94		Bis(2-chloroethoxy)methane
BWTU-2-2-DS	94.02165	111444	< 10.		UG/L	3/04/94		Bis(2-chloroethyl)ether
BWTU-2-2-DS	94.02165	108601	< 10.		UG/L	3/04/94		Bis(2-chloroisopropyl)ether
BWTU-2-2-DS	94.02165	117817	< 10.		UG/L	3/04/94		Bis(2-ethylhexyl)phthalate
BWTU-2-2-DS	94.02165	101553	< 10.		UG/L	3/04/94		4-Bromophenylphenyl ether
BWTU-2-2-DS	94.02165	85687	< 10.		UG/L	3/04/94		Butyl benzyl phthalate
BWTU-2-2-DS	94.02165	59507	< 10.		UG/L	3/04/94		4-Chloro-3-methylphenol
BWTU-2-2-DS	94.02165	106478	< 10.		UG/L	3/04/94		4-Chloroaniline
BWTU-2-2-DS	94.02165	91587	< 10.		UG/L	3/04/94		2-Chloronaphthalene
BWTU-2-2-DS	94.02165	95578	< 10.		UG/L	3/04/94		o-Chlorophenol
BWTU-2-2-DS	94.02165	7005723	< 10.		UG/L	3/04/94		4-Chlorophenylphenyl ether
BWTU-2-2-DS	94.02165	218019	< 10.		UG/L	3/04/94		Chrysene
BWTU-2-2-DS	94.02165	84742	< 10.		UG/L	3/04/94		Di-n-butyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-2-DS	94.02165	117840	< 10.		UG/L	3/04/94		Di-n-octyl phthalate
BWTU-2-2-DS	94.02165	53703	< 10.		UG/L	3/04/94		Dibenzo[a,h]anthracene
BWTU-2-2-DS	94.02165	132649	< 10.		UG/L	3/04/94		Dibenzofuran
BWTU-2-2-DS	94.02165	95501	< 10.		UG/L	3/04/94		o-Dichlorobenzene (1,2)
BWTU-2-2-DS	94.02165	541731	< 10.		UG/L	3/04/94		m-Dichlorobenzene (1,3)
BWTU-2-2-DS	94.02165	106467	< 10.		UG/L	3/04/94		p-Dichlorobenzene (1,4)
BWTU-2-2-DS	94.02165	91941	< 10.		UG/L	3/04/94		3,3'-Dichlorobenzidine
BWTU-2-2-DS	94.02165	120832	< 10.		UG/L	3/04/94		2,4-Dichlorophenol
BWTU-2-2-DS	94.02165	84662	< 10.		UG/L	3/04/94		Diethyl phthalate
BWTU-2-2-DS	94.02165	131113	< 10.		UG/L	3/04/94		Dimethyl phthalate
BWTU-2-2-DS	94.02165	105679	< 10.		UG/L	3/04/94		2,4-Dimethylphenol
BWTU-2-2-DS	94.02165	51285	< 10.		UG/L	3/04/94		2,4-Dinitrophenol
BWTU-2-2-DS	94.02165	121142	< 10.		UG/L	3/04/94		2,4-Dinitrotoluene
BWTU-2-2-DS	94.02165	606202	< 10.		UG/L	3/04/94		2,6-Dinitrotoluene
BWTU-2-2-DS	94.02165	206440	< 10.		UG/L	3/04/94		Fluoranthene
BWTU-2-2-DS	94.02165	86737	< 10.		UG/L	3/04/94		Fluorene
BWTU-2-2-DS	94.02165	118741	< 10.		UG/L	3/04/94		Hexachlorobenzene
BWTU-2-2-DS	94.02165	87683	< 10.		UG/L	3/04/94		Hexachlorobutadiene
BWTU-2-2-DS	94.02165	77474	< 10.		UG/L	3/04/94		Hexachlorocyclopentadiene
BWTU-2-2-DS	94.02165	67721	< 10.		UG/L	3/04/94		Hexachloroethane
BWTU-2-2-DS	94.02165	193395	< 10.		UG/L	3/04/94		Indeno[1,2,3-cd]pyrene
BWTU-2-2-DS	94.02165	78591	< 10.		UG/L	3/04/94		Isophorone
BWTU-2-2-DS	94.02165	534521	< 10.		UG/L	3/04/94		2-Methyl-4,6-dinitrophenol
BWTU-2-2-DS	94.02165	91576	< 10.		UG/L	3/04/94		2-Methylnaphthalene
BWTU-2-2-DS	94.02165	95487	< 10.		UG/L	3/04/94		2-Methylphenol
BWTU-2-2-DS	94.02165	106445	< 10.		UG/L	3/04/94		4-Methylphenol
BWTU-2-2-DS	94.02165	91203	< 10.		UG/L	3/04/94		Naphthalene
BWTU-2-2-DS	94.02165	88744	< 10.		UG/L	3/04/94		2-Nitroaniline
BWTU-2-2-DS	94.02165	99092	< 10.		UG/L	3/04/94		3-Nitroaniline
BWTU-2-2-DS	94.02165	100016	< 10.		UG/L	3/04/94		4-Nitroaniline
BWTU-2-2-DS	94.02165	98953	< 10.		UG/L	3/04/94		Nitrobenzene
BWTU-2-2-DS	94.02165	88755	< 10.		UG/L	3/04/94		2-Nitrophenol
BWTU-2-2-DS	94.02165	100027	< 10.		UG/L	3/04/94		4-Nitrophenol
BWTU-2-2-DS	94.02165	621647	< 10.		UG/L	3/04/94		N-Nitrosodi-n-propylamine
BWTU-2-2-DS	94.02165	62759	< 10.		UG/L	3/04/94		N-Nitrosodimethylamine
BWTU-2-2-DS	94.02165	86306	< 10.		UG/L	3/04/94		N-Nitrosodiphenylamine

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-2-DS	94.02165	87865	< 10.		UG/L	3/04/94		Pentachlorophenol
BWTU-2-2-DS	94.02165	85018	< 10.		UG/L	3/04/94		Phenanthrene
BWTU-2-2-DS	94.02165	108952	< 10.		UG/L	3/04/94		Phenol
BWTU-2-2-DS	94.02165	129000	< 10.		UG/L	3/04/94		Pyrene
BWTU-2-2-DS	94.02165	120821	< 10.		UG/L	3/04/94		1,2,4-Trichlorobenzene
BWTU-2-2-DS	94.02165	95954	< 10.		UG/L	3/04/94		2,4,5-Trichlorophenol
BWTU-2-2-DS	94.02165	88062	< 10.		UG/L	3/04/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.02165

none

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LCO on 4-Mar-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: M36A NOTEBOOK: R7710 PAGE: 293

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02998 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/07/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-CS	94.02998	83329	< 10.		UG/L	3/04/94	94.02142 DUP	Acenaphthene
BWTU-1-2-CS	94.02998	208968	< 10.		UG/L	3/04/94	94.02142 DUP	Acenaphthylene
BWTU-1-2-CS	94.02998	62533	< 10.		UG/L	3/04/94	94.02142 DUP	Aniline
BWTU-1-2-CS	94.02998	120127	< 10.		UG/L	3/04/94	94.02142 DUP	Anthracene
BWTU-1-2-CS	94.02998	103333	< 10.		UG/L	3/04/94	94.02142 DUP	Azobenzene
BWTU-1-2-CS	94.02998	92875	< 10.		UG/L	3/04/94	94.02142 DUP	m-Benzidine
BWTU-1-2-CS	94.02998	56553	< 10.		UG/L	3/04/94	94.02142 DUP	Benzo[a]anthracene
BWTU-1-2-CS	94.02998	50328	< 10.		UG/L	3/04/94	94.02142 DUP	Benzo[a]pyrene
BWTU-1-2-CS	94.02998	205992	< 10.		UG/L	3/04/94	94.02142 DUP	Benzo[b]fluoranthene
BWTU-1-2-CS	94.02998	191242	< 10.		UG/L	3/04/94	94.02142 DUP	Benzo[g,h,i]perylene
BWTU-1-2-CS	94.02998	207089	< 10.		UG/L	3/04/94	94.02142 DUP	Benzo[k]fluoranthene
BWTU-1-2-CS	94.02998	65850	< 10.		UG/L	3/04/94	94.02142 DUP	Benzoic acid
BWTU-1-2-CS	94.02998	100516	< 10.		UG/L	3/04/94	94.02142 DUP	Benzyl alcohol
BWTU-1-2-CS	94.02998	111911	< 10.		UG/L	3/04/94	94.02142 DUP	Bis(2-chloroethoxy)methane
BWTU-1-2-CS	94.02998	111444	< 10.		UG/L	3/04/94	94.02142 DUP	Bis(2-chloroethyl)ether
BWTU-1-2-CS	94.02998	108601	< 10.		UG/L	3/04/94	94.02142 DUP	Bis(2-chloroisopropyl)ether
BWTU-1-2-CS	94.02998	117817	35.	10.5	UG/L	3/04/94	94.02142 DUP	Bis(2-ethylhexyl)phthalate
BWTU-1-2-CS	94.02998	101553	< 10.		UG/L	3/04/94	94.02142 DUP	4-Bromophenylphenyl ether
BWTU-1-2-CS	94.02998	85687	< 10.		UG/L	3/04/94	94.02142 DUP	Butyl benzyl phthalate
BWTU-1-2-CS	94.02998	59507	< 10.		UG/L	3/04/94	94.02142 DUP	4-Chloro-3-methylphenol
BWTU-1-2-CS	94.02998	106478	< 10.		UG/L	3/04/94	94.02142 DUP	4-Chloroaniline
BWTU-1-2-CS	94.02998	91587	< 10.		UG/L	3/04/94	94.02142 DUP	2-Chloronaphthalene
BWTU-1-2-CS	94.02998	95578	< 10.		UG/L	3/04/94	94.02142 DUP	o-Chlorophenol
BWTU-1-2-CS	94.02998	7005723	< 10.		UG/L	3/04/94	94.02142 DUP	4-Chlorophenylphenyl ether
BWTU-1-2-CS	94.02998	218019	< 10.		UG/L	3/04/94	94.02142 DUP	Chrysene
BWTU-1-2-CS	94.02998	84742	< 10.		UG/L	3/04/94	94.02142 DUP	Di-n-butyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-CS	94.02998	117840	< 10.		UG/L	3/04/94	94.02142 DUP	Di-n-octyl phthalate
BWTU-1-2-CS	94.02998	53703	< 10.		UG/L	3/04/94	94.02142 DUP	Dibenzo[a,h]anthracene
BWTU-1-2-CS	94.02998	132649	< 10.		UG/L	3/04/94	94.02142 DUP	Dibenzofuran
BWTU-1-2-CS	94.02998	95501	< 10.		UG/L	3/04/94	94.02142 DUP	o-Dichlorobenzene (1,2)
BWTU-1-2-CS	94.02998	541731	< 10.		UG/L	3/04/94	94.02142 DUP	m-Dichlorobenzene (1,3)
BWTU-1-2-CS	94.02998	106467	< 10.		UG/L	3/04/94	94.02142 DUP	p-Dichlorobenzene (1,4)
BWTU-1-2-CS	94.02998	91941	< 10.		UG/L	3/04/94	94.02142 DUP	3,3'-Dichlorobenzidine
BWTU-1-2-CS	94.02998	120832	< 10.		UG/L	3/04/94	94.02142 DUP	2,4-Dichlorophenol
BWTU-1-2-CS	94.02998	84662	< 10.		UG/L	3/04/94	94.02142 DUP	Diethyl phthalate
BWTU-1-2-CS	94.02998	131113	< 10.		UG/L	3/04/94	94.02142 DUP	Dimethyl phthalate
BWTU-1-2-CS	94.02998	105679	< 10.		UG/L	3/04/94	94.02142 DUP	2,4-Dimethylphenol
BWTU-1-2-CS	94.02998	51285	< 10.		UG/L	3/04/94	94.02142 DUP	2,4-Dinitrophenol
BWTU-1-2-CS	94.02998	121142	< 10.		UG/L	3/04/94	94.02142 DUP	2,4-Dinitrotoluene
BWTU-1-2-CS	94.02998	606202	< 10.		UG/L	3/04/94	94.02142 DUP	2,6-Dinitrotoluene
BWTU-1-2-CS	94.02998	206440	< 10.		UG/L	3/04/94	94.02142 DUP	Fluoranthene
BWTU-1-2-CS	94.02998	86737	< 10.		UG/L	3/04/94	94.02142 DUP	Fluorene
BWTU-1-2-CS	94.02998	118741	< 10.		UG/L	3/04/94	94.02142 DUP	Hexachlorobenzene
BWTU-1-2-CS	94.02998	87683	< 10.		UG/L	3/04/94	94.02142 DUP	Hexachlorobutadiene
BWTU-1-2-CS	94.02998	77474	< 10.		UG/L	3/04/94	94.02142 DUP	Hexachlorocyclopentadiene
BWTU-1-2-CS	94.02998	67721	< 10.		UG/L	3/04/94	94.02142 DUP	Hexachloroethane
BWTU-1-2-CS	94.02998	193395	< 10.		UG/L	3/04/94	94.02142 DUP	Indeno[1,2,3-cd]pyrene
BWTU-1-2-CS	94.02998	78591	< 10.		UG/L	3/04/94	94.02142 DUP	Isophorone
BWTU-1-2-CS	94.02998	534521	< 10.		UG/L	3/04/94	94.02142 DUP	2-Methyl-4,6-dinitrophenol
BWTU-1-2-CS	94.02998	91576	< 10.		UG/L	3/04/94	94.02142 DUP	2-Methylnaphthalene
BWTU-1-2-CS	94.02998	95487	< 10.		UG/L	3/04/94	94.02142 DUP	2-Methylphenol
BWTU-1-2-CS	94.02998	106445	< 10.		UG/L	3/04/94	94.02142 DUP	4-Methylphenol
BWTU-1-2-CS	94.02998	91203	< 10.		UG/L	3/04/94	94.02142 DUP	Naphthalene
BWTU-1-2-CS	94.02998	88744	< 10.		UG/L	3/04/94	94.02142 DUP	2-Nitroaniline
BWTU-1-2-CS	94.02998	99092	< 10.		UG/L	3/04/94	94.02142 DUP	3-Nitroaniline
BWTU-1-2-CS	94.02998	100016	< 10.		UG/L	3/04/94	94.02142 DUP	4-Nitroaniline
BWTU-1-2-CS	94.02998	98953	< 10.		UG/L	3/04/94	94.02142 DUP	Nitrobenzene
BWTU-1-2-CS	94.02998	88755	< 10.		UG/L	3/04/94	94.02142 DUP	2-Nitrophenol
BWTU-1-2-CS	94.02998	100027	< 10.		UG/L	3/04/94	94.02142 DUP	4-Nitrophenol
BWTU-1-2-CS	94.02998	621647	< 10.		UG/L	3/04/94	94.02142 DUP	N-Nitrosodi-n-propylamine
BWTU-1-2-CS	94.02998	62759	< 10.		UG/L	3/04/94	94.02142 DUP	N-Nitrosodimethylamine
BWTU-1-2-CS	94.02998	86306	< 10.		UG/L	3/04/94	94.02142 DUP	N-Nitrosodiphenylamine

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-2-CS	94.02998	87865	< 10.		UG/L	3/04/94	94.02142 DUP	Pentachlorophenol
BWTU-1-2-CS	94.02998	85018	< 10.		UG/L	3/04/94	94.02142 DUP	Phenanthrene
BWTU-1-2-CS	94.02998	108952	< 10.		UG/L	3/04/94	94.02142 DUP	Phenol
BWTU-1-2-CS	94.02998	129000	< 10.		UG/L	3/04/94	94.02142 DUP	Pyrene
BWTU-1-2-CS	94.02998	120821	< 10.		UG/L	3/04/94	94.02142 DUP	1,2,4-Trichlorobenzene
BWTU-1-2-CS	94.02998	95954	< 10.		UG/L	3/04/94	94.02142 DUP	2,4,5-Trichlorophenol
BWTU-1-2-CS	94.02998	88062	< 10.		UG/L	3/04/94	94.02142 DUP	2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.02998

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA SEMIVOLATILES Prepared by: LCO on 4-Mar-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: ANTHONY LOMBARDO PROGRAM CODE: M36A NOTEBOOK: R7710 PAGE: 293

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.02144 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/07/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02144	83329	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Acenaphthene
00.20226	94.02144	208968	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Acenaphthylene
00.20226	94.02144	62533	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Aniline
00.20226	94.02144	120127	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Anthracene
00.20226	94.02144	103333	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Azobenzene
00.20226	94.02144	92875	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	m-Benzidine
00.20226	94.02144	56553	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[a]anthracene
00.20226	94.02144	50328	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[a]pyrene
00.20226	94.02144	205992	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[b]fluoranthene
00.20226	94.02144	191242	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[g,h,i]perylene
00.20226	94.02144	207089	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[k]fluoranthene
00.20226	94.02144	65850	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzoic acid
00.20226	94.02144	100516	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzyl alcohol
00.20226	94.02144	111911	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
00.20226	94.02144	111444	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-chloroethyl)ether
00.20226	94.02144	108601	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
00.20226	94.02144	117817	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
00.20226	94.02144	101553	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Bromophenylphenyl ether
00.20226	94.02144	85687	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Butyl benzyl phthalate
00.20226	94.02144	59507	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Chloro-3-methylphenol
00.20226	94.02144	106478	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Chloroaniline

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02144	91587	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Chloronaphthalene
00.20226	94.02144	95578	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	o-Chlorophenol
00.20226	94.02144	7005723	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Chlorophenylphenyl ether
00.20226	94.02144	218019	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Chrysene
00.20226	94.02144	84742	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Di-n-butyl phthalate
00.20226	94.02144	117840	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Di-n-octyl phthalate
00.20226	94.02144	53703	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Dibenzo[a,h]anthracene
00.20226	94.02144	132649	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Dibenzofuran
00.20226	94.02144	95501	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.02144	541731	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.02144	106467	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.02144	91941	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	3,3'-Dichlorobenzidine
00.20226	94.02144	120832	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dichlorophenol
00.20226	94.02144	84662	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Diethyl phthalate
00.20226	94.02144	131113	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Dimethyl phthalate
00.20226	94.02144	105679	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dimethylphenol
00.20226	94.02144	51285	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dinitrophenol
00.20226	94.02144	121142	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dinitrotoluene
00.20226	94.02144	606202	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,6-Dinitrotoluene
00.20226	94.02144	206440	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Fluoranthene
00.20226	94.02144	86737	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Fluorene
00.20226	94.02144	118741	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachlorobenzene
00.20226	94.02144	87683	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachlorobutadiene
00.20226	94.02144	77474	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachlorocyclopentadiene
00.20226	94.02144	67721	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachloroethane
00.20226	94.02144	193395	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
00.20226	94.02144	78591	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Isophorone
00.20226	94.02144	534521	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
00.20226	94.02144	91576	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Methylnaphthalene
00.20226	94.02144	95487	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Methylphenol
00.20226	94.02144	106445	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Methylphenol
00.20226	94.02144	91203	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Naphthalene
00.20226	94.02144	88744	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Nitroaniline
00.20226	94.02144	99092	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	3-Nitroaniline
00.20226	94.02144	100016	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Nitroaniline
00.20226	94.02144	98953	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Nitrobenzene

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02144	88755	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Nitrophenol
00.20226	94.02144	100027	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Nitrophenol
00.20226	94.02144	621647	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
00.20226	94.02144	62759	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	N-Nitrosodimethylamine
00.20226	94.02144	86306	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	N-Nitrosodiphenylamine
00.20226	94.02144	87865	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Pentachlorophenol
00.20226	94.02144	85018	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Phenanthrene
00.20226	94.02144	108952	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Phenol
00.20226	94.02144	129000	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Pyrene
00.20226	94.02144	120821	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	1,2,4-Trichlorobenzene
00.20226	94.02144	95954	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4,5-Trichlorophenol
00.20226	94.02144	88062	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4,6-Trichlorophenol

Blank Results, Sample # 94.02153 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/09/94 Date Analyzed: 2/23/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02153	83329	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Acenaphthene
00.20226	94.02153	208968	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Acenaphthylene
00.20226	94.02153	62533	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Aniline
00.20226	94.02153	120127	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Anthracene
00.20226	94.02153	103333	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Azobenzene
00.20226	94.02153	92875	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	m-Benzidine
00.20226	94.02153	56553	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[a]anthracene
00.20226	94.02153	50328	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[a]pyrene
00.20226	94.02153	205992	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[b]fluoranthene

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02153	191242	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[g,h,i]perylene
00.20226	94.02153	207089	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzo[k]fluoranthene
00.20226	94.02153	65850	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzoic acid
00.20226	94.02153	100516	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Benzyl alcohol
00.20226	94.02153	111911	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
00.20226	94.02153	111444	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-chloroethyl)ether
00.20226	94.02153	108601	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
00.20226	94.02153	117817	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
00.20226	94.02153	101553	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Bromophenylphenyl ether
00.20226	94.02153	85687	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Butyl benzyl phthalate
00.20226	94.02153	59507	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Chloro-3-methylphenol
00.20226	94.02153	106478	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Chloroaniline
00.20226	94.02153	91587	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Chloronaphthalene
00.20226	94.02153	95578	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	o-Chlorophenol
00.20226	94.02153	7005723	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Chlorophenylphenyl ether
00.20226	94.02153	218019	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Chrysene
00.20226	94.02153	84742	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Di-n-butyl phthalate
00.20226	94.02153	117840	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Di-n-octyl phthalate
00.20226	94.02153	53703	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Dibenzo[a,h]anthracene
00.20226	94.02153	132649	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Dibenzofuran
00.20226	94.02153	95501	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.02153	541731	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.02153	106467	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.02153	91941	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	3,3'-Dichlorobenzidine
00.20226	94.02153	120832	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dichlorophenol
00.20226	94.02153	84662	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Diethyl phthalate
00.20226	94.02153	131113	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Dimethyl phthalate
00.20226	94.02153	105679	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dimethylphenol
00.20226	94.02153	51285	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dinitrophenol
00.20226	94.02153	121142	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4-Dinitrotoluene
00.20226	94.02153	606202	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,6-Dinitrotoluene
00.20226	94.02153	206440	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Fluoranthene
00.20226	94.02153	86737	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Fluorene
00.20226	94.02153	118741	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachlorobenzene
00.20226	94.02153	87683	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachlorobutadiene
00.20226	94.02153	77474	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachlorocyclopentadiene

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02153	67721	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Hexachloroethane
00.20226	94.02153	193395	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
00.20226	94.02153	78591	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Isophorone
00.20226	94.02153	534521	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
00.20226	94.02153	91576	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Methylnaphthalene
00.20226	94.02153	95487	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Methylphenol
00.20226	94.02153	106445	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Methylphenol
00.20226	94.02153	91203	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Naphthalene
00.20226	94.02153	88744	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Nitroaniline
00.20226	94.02153	99092	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	3-Nitroaniline
00.20226	94.02153	100016	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Nitroaniline
00.20226	94.02153	98953	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Nitrobenzene
00.20226	94.02153	88755	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2-Nitrophenol
00.20226	94.02153	100027	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	4-Nitrophenol
00.20226	94.02153	621647	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
00.20226	94.02153	62759	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	N-Nitrosodimethylamine
00.20226	94.02153	86306	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	N-Nitrosodiphenylamine
00.20226	94.02153	87865	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Pentachlorophenol
00.20226	94.02153	85018	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Phenanthrene
00.20226	94.02153	108952	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Phenol
00.20226	94.02153	129000	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	Pyrene
00.20226	94.02153	120821	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	1,2,4-Trichlorobenzene
00.20226	94.02153	95954	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4,5-Trichlorophenol
00.20226	94.02153	88062	< 10.		UG/L	0.0		3/04/94	UNDER CONTROL	2,4,6-Trichlorophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

Blank Spike Results, Sample # 94.02144 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/07/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02144	83329	50.	33.	UG/L	0.0		3/04/94		Acenaphthene
00.20226	94.02144	59507	100.	37.	UG/L	0.0		3/04/94		4-Chloro-3-methylphenol
00.20226	94.02144	95578	100.	38.	UG/L	0.0		3/04/94		o-Chlorophenol
00.20226	94.02144	106467	50.	27.	UG/L	0.0		3/04/94		p-Dichlorobenzene (1,4)
00.20226	94.02144	121142	50.	34.	UG/L	0.0		3/04/94		2,4-Dinitrotoluene
00.20226	94.02144	100027	100.	17.	UG/L	0.0		3/04/94		4-Nitrophenol
00.20226	94.02144	621647	50.	26.	UG/L	0.0		3/04/94		N-Nitrosodi-n-propylamine
00.20226	94.02144	87865	100.	12.	UG/L	0.0		3/04/94		Pentachlorophenol
00.20226	94.02144	108952	100.	23.	UG/L	0.0		3/04/94		Phenol
00.20226	94.02144	129000	50.	39.	UG/L	0.0		3/04/94		Pyrene
00.20226	94.02144	120821	50.	30.	UG/L	0.0		3/04/94		1,2,4-Trichlorobenzene

********** EM-9 QUALITY ASSURANCE REPORT **********

Blank Spike Duplicate Results, Sample # 94.02144 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/07/94 Date Analyzed: 2/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02144	83329	50.	36.	UG/L	0.0		3/04/94		Acenaphthene
00.20226	94.02144	59507	100.	61.	UG/L	0.0		3/04/94		4-Chloro-3-methylphenol
00.20226	94.02144	95578	100.	55.	UG/L	0.0		3/04/94		o-Chlorophenol
00.20226	94.02144	106467	50.	29.	UG/L	0.0		3/04/94		p-Dichlorobenzene (1,4)
00.20226	94.02144	121142	50.	37.	UG/L	0.0		3/04/94		2,4-Dinitrotoluene
00.20226	94.02144	100027	100.	77.	UG/L	0.0		3/04/94		4-Nitrophenol
00.20226	94.02144	621647	50.	30.	UG/L	0.0		3/04/94		N-Nitrosodi-n-propylamine
00.20226	94.02144	87865	100.	73.	UG/L	0.0		3/04/94		Pentachlorophenol
00.20226	94.02144	108952	100.	50.	UG/L	0.0		3/04/94		Phenol
00.20226	94.02144	129000	50.	41.	UG/L	0.0		3/04/94		Pyrene
00.20226	94.02144	120821	50.	32.	UG/L	0.0		3/04/94		1,2,4-Trichlorobenzene

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Open (non-blind) QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA SEMIVOLATILES

Surrogate 1 = 2-Fluorophenol (CAS # = 367124)
Surrogate 2 = Phenol-d5 (CAS # = 4165622)
Surrogate 3 = Nitrobenzene-d5 (CAS # = 4165600)
Surrogate 4 = 2-Fluorobiphenyl (CAS # = 321608)
Surrogate 5 = 2,4,6-Tribromophenol (CAS # = 118796)
Surrogate 6 = p-Terphenyl-d14 (CAS # =)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	Surrogate 6	COMPLETION DATE
94.02142	%	59.15	0.752	97.86	267.12	104.58	162.78	4-Mar-1994
94.02144	%	23.79	23.91	58.98	71.08	54.77	79.4	4-Mar-1994
94.02144	%	52.38	51.97	62.64	75.78	78.77	83.5	4-Mar-1994
94.02144	%	52.05	55.21	68.02	75.26	73.47	77.84	4-Mar-1994
94.02153	%	65.78	72.52	77.32	81.5	82.86	77.58	4-Mar-1994
94.02161	%	51.39	3.04	83.06	94.9	60.85	104.9	4-Mar-1994
94.02163	%	1.79	3.57	7.62	17.48		18.42	4-Mar-1994
94.02165	%	17.12	33.63	66.28	73.24		80.44	4-Mar-1994
94.02998	%	58.2	0.861	107.54	194.9	99.92	149.34	4-Mar-1994
EPA Limits:								
Water	%	21 - 100	10 - 94	35 - 114	43 - 116	10 - 123	33 - 141	
Soil	%	25 - 121	24 - 113	23 - 120	30 - 115	19 - 122	18 - 137	

REPORT NUMBER: 23125

Analyst	Reviewer	Section Leader	QA Officer
03/04/94	03-04-94	03/07/94	3/7/94
Date	Date	Date	Date

No Samr' Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in
'Quality Assurance for Health and Environmental Chemistry: 1991,' LA-12436-MS, Vol. I, pp. 21-22

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********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LCO on 17-Feb-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: DON DALE PROGRAM CODE: M36A NOTEBOOK: PAGE:

OWNER: JEF GROUP: MAIL-STOP: PHONE: TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02156 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/10/94 Date Analyzed: 2/10/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-CS	94.02156	67641	750.	225.	UG/L	2/17/94	N	Acetone
BWTU-1-3-CS	94.02156	71432	< 50.		UG/L	2/17/94	N	Benzene
BWTU-1-3-CS	94.02156	108861	< 50.		UG/L	2/17/94	N	Bromobenzene
BWTU-1-3-CS	94.02156	74975	< 50.		UG/L	2/17/94	N	Bromochloromethane
BWTU-1-3-CS	94.02156	75274	< 50.		UG/L	2/17/94	N	Bromodichloromethane
BWTU-1-3-CS	94.02156	75252	< 50.		UG/L	2/17/94	N	Bromoform
BWTU-1-3-CS	94.02156	74839	< 100.		UG/L	2/17/94	N	Bromomethane
BWTU-1-3-CS	94.02156	78933	430.	129.	UG/L	2/17/94	N	2-Butanone
BWTU-1-3-CS	94.02156	104518	< 50.		UG/L	2/17/94	N	n-Butylbenzene
BWTU-1-3-CS	94.02156	135988	< 50.		UG/L	2/17/94	N	sec-Butylbenzene
BWTU-1-3-CS	94.02156	98066	< 50.		UG/L	2/17/94	N	tert-Butylbenzene
BWTU-1-3-CS	94.02156	75150	< 50.		UG/L	2/17/94	N	Carbon disulfide
BWTU-1-3-CS	94.02156	56235	< 50.		UG/L	2/17/94	N	Carbon tetrachloride
BWTU-1-3-CS	94.02156	108907	< 50.		UG/L	2/17/94	N	Chlorobenzene
BWTU-1-3-CS	94.02156	124481	< 50.		UG/L	2/17/94	N	Chlorodibromomethane
BWTU-1-3-CS	94.02156	75003	< 100.		UG/L	2/17/94	N	Chloroethane
BWTU-1-3-CS	94.02156	67663	< 50.		UG/L	2/17/94	N	Chloroform
BWTU-1-3-CS	94.02156	74873	< 100.		UG/L	2/17/94	N	Chloromethane
BWTU-1-3-CS	94.02156	95498	< 50.		UG/L	2/17/94	N	o-Chlorotoluene
BWTU-1-3-CS	94.02156	106434	< 50.		UG/L	2/17/94	N	p-Chlorotoluene
BWTU-1-3-CS	94.02156	96128	< 100.		UG/L	2/17/94	N	1,2-Dibromo-3-chloropropane
BWTU-1-3-CS	94.02156	74953	< 50.		UG/L	2/17/94	N	Dibromomethane
BWTU-1-3-CS	94.02156	95501	< 50.		UG/L	2/17/94	N	o-Dichlorobenzene (1,2)
BWTU-1-3-CS	94.02156	541731	< 50.		UG/L	2/17/94	N	m-Dichlorobenzene (1,3)
BWTU-1-3-CS	94.02156	106467	< 50.		UG/L	2/17/94	N	p-Dichlorobenzene (1,4)
BWTU-1-3-CS	94.02156	75718	< 100.		UG/L	2/17/94	N	Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-CS	94.02156	75343	< 50.		UG/L	2/17/94	N	1,1-Dichloroethane
BWTU-1-3-CS	94.02156	107062	< 50.		UG/L	2/17/94	N	1,2-Dichloroethane
BWTU-1-3-CS	94.02156	75354	< 50.		UG/L	2/17/94	N	1,1-Dichloroethene
BWTU-1-3-CS	94.02156	156605	< 50.		UG/L	2/17/94	N	trans-1,2-Dichloroethene
BWTU-1-3-CS	94.02156	156592	< 50.		UG/L	2/17/94	N	cis-1,2-Dichloroethylene
BWTU-1-3-CS	94.02156	78875	< 50.		UG/L	2/17/94	N	1,2-Dichloropropane
BWTU-1-3-CS	94.02156	142289	< 50.		UG/L	2/17/94	N	1,3-Dichloropropane
BWTU-1-3-CS	94.02156	594207	< 50.		UG/L	2/17/94	N	2,2-Dichloropropane
BWTU-1-3-CS	94.02156	563586	< 50.		UG/L	2/17/94	N	1,1-Dichloropropene
BWTU-1-3-CS	94.02156	10061015	< 50.		UG/L	2/17/94	N	cis-1,3-Dichloropropene
BWTU-1-3-CS	94.02156	10061026	< 50.		UG/L	2/17/94	N	trans-1,3-Dichloropropene
BWTU-1-3-CS	94.02156	100414	< 50.		UG/L	2/17/94	N	Ethylbenzene
BWTU-1-3-CS	94.02156	106934	< 50.		UG/L	2/17/94	N	Ethylene dibromide
BWTU-1-3-CS	94.02156	591786	< 200.		UG/L	2/17/94	N	2-Hexanone
BWTU-1-3-CS	94.02156	98828	< 50.		UG/L	2/17/94	N	Isopropylbenzene
BWTU-1-3-CS	94.02156	99876	< 50.		UG/L	2/17/94	N	4-Isopropyltoluene
BWTU-1-3-CS	94.02156	74884	< 50.		UG/L	2/17/94	N	Methyl iodide
BWTU-1-3-CS	94.02156	108101	< 200.		UG/L	2/17/94	N	4-Methyl-2-pentanone
BWTU-1-3-CS	94.02156	75092	< 50.		UG/L	2/17/94	N	Methylene chloride
BWTU-1-3-CS	94.02156	103651	< 50.		UG/L	2/17/94	N	Propylbenzene
BWTU-1-3-CS	94.02156	100425	< 50.		UG/L	2/17/94	N	Styrene
BWTU-1-3-CS	94.02156	630206	< 50.		UG/L	2/17/94	N	1,1,1,2-Tetrachloroethane
BWTU-1-3-CS	94.02156	79345	< 50.		UG/L	2/17/94	N	1,1,2,2-Tetrachloroethane
BWTU-1-3-CS	94.02156	127184	< 50.		UG/L	2/17/94	N	Tetrachloroethylene
BWTU-1-3-CS	94.02156	108883	< 50.		UG/L	2/17/94	N	Toluene
BWTU-1-3-CS	94.02156	76131	< 50.		UG/L	2/17/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-1-3-CS	94.02156	71556	< 50.		UG/L	2/17/94	N	1,1,1-Trichloroethane
BWTU-1-3-CS	94.02156	79005	< 50.		UG/L	2/17/94	N	1,1,2-Trichloroethane
BWTU-1-3-CS	94.02156	79016	< 50.		UG/L	2/17/94	N	Trichloroethene
BWTU-1-3-CS	94.02156	75694	< 50.		UG/L	2/17/94	N	Trichlorofluoromethane
BWTU-1-3-CS	94.02156	96184	< 50.		UG/L	2/17/94	N	1,2,3-Trichloropropane
BWTU-1-3-CS	94.02156	95636	< 50.		UG/L	2/17/94	N	1,2,4-Trimethylbenzene
BWTU-1-3-CS	94.02156	108678	< 50.		UG/L	2/17/94	N	1,3,5-Trimethylbenzene
BWTU-1-3-CS	94.02156	75014	< 100.		UG/L	2/17/94	N	Vinyl chloride
BWTU-1-3-CS	94.02156	1330207	< 50.		UG/L	2/17/94	N	Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.02156

none

********** EM-9 ANALYTICAL REPORT **********

Matrix Spike Results for Sample # 94.02156 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/10/94 Date Analyzed: 2/10/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-CS	94.02156	71432	50.	65.	UG/L	2/17/94		Benzene
BWTU-1-3-CS	94.02156	108907	50.	67.	UG/L	2/17/94		Chlorobenzene
BWTU-1-3-CS	94.02156	75343	50.	100.	UG/L	2/17/94		1,1-Dichloroethane
BWTU-1-3-CS	94.02156	108883	50.	74.	UG/L	2/17/94		Toluene
BWTU-1-3-CS	94.02156	79016	50.	61.	UG/L	2/17/94		Trichloroethene

Matrix Spike Duplicate Results for Sample # 94.02156 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/10/94 Date Analyzed: 2/10/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-CS	94.02156	71432	50.	61.	UG/L	2/17/94		Benzene
BWTU-1-3-CS	94.02156	108907	50.	60.	UG/L	2/17/94		Chlorobenzene
BWTU-1-3-CS	94.02156	75343	50.	87.	UG/L	2/17/94		1,1-Dichloroethane
BWTU-1-3-CS	94.02156	108883	50.	63.	UG/L	2/17/94		Toluene
BWTU-1-3-CS	94.02156	79016	50.	55.	UG/L	2/17/94		Trichloroethene

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LCO on 17-Feb-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: DON DALE PROGRAM CODE: M36A NOTEBOOK: PAGE:

OWNER: JEF GROUP: MAIL-STOP: PHONE: TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02162 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/13/94 Date Analyzed: 2/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-3-CS	94.02162	67641	4000.	1200.	UG/L	2/17/94	N	Acetone
BWTU-2-3-CS	94.02162	71432	< 250.		UG/L	2/17/94	N	Benzene
BWTU-2-3-CS	94.02162	108861	< 250.		UG/L	2/17/94	N	Bromobenzene
BWTU-2-3-CS	94.02162	74975	< 250.		UG/L	2/17/94	N	Bromochloromethane
BWTU-2-3-CS	94.02162	75274	< 250.		UG/L	2/17/94	N	Bromodichloromethane
BWTU-2-3-CS	94.02162	75252	< 250.		UG/L	2/17/94	N	Bromoform
BWTU-2-3-CS	94.02162	74839	< 500.		UG/L	2/17/94	N	Bromomethane
BWTU-2-3-CS	94.02162	78933	1200.	360.	UG/L	2/17/94	N	2-Butanone
BWTU-2-3-CS	94.02162	104518	< 250.		UG/L	2/17/94	N	n-Butylbenzene
BWTU-2-3-CS	94.02162	135988	< 250.		UG/L	2/17/94	N	sec-Butylbenzene
BWTU-2-3-CS	94.02162	98066	< 250.		UG/L	2/17/94	N	tert-Butylbenzene
BWTU-2-3-CS	94.02162	75150	< 250.		UG/L	2/17/94	N	Carbon disulfide
BWTU-2-3-CS	94.02162	56235	< 250.		UG/L	2/17/94	N	Carbon tetrachloride
BWTU-2-3-CS	94.02162	108907	< 250.		UG/L	2/17/94	N	Chlorobenzene
BWTU-2-3-CS	94.02162	124481	< 250.		UG/L	2/17/94	N	Chlorodibromomethane
BWTU-2-3-CS	94.02162	75003	< 500.		UG/L	2/17/94	N	Chloroethane
BWTU-2-3-CS	94.02162	67663	< 250.		UG/L	2/17/94	N	Chloroform
BWTU-2-3-CS	94.02162	74873	< 500.		UG/L	2/17/94	N	Chloromethane
BWTU-2-3-CS	94.02162	95498	< 250.		UG/L	2/17/94	N	o-Chlorotoluene
BWTU-2-3-CS	94.02162	106434	< 250.		UG/L	2/17/94	N	p-Chlorotoluene
BWTU-2-3-CS	94.02162	96128	< 500.		UG/L	2/17/94	N	1,2-Dibromo-3-chloropropane
BWTU-2-3-CS	94.02162	74953	< 250.		UG/L	2/17/94	N	Dibromomethane
BWTU-2-3-CS	94.02162	95501	< 250.		UG/L	2/17/94	N	o-Dichlorobenzene (1,2)
BWTU-2-3-CS	94.02162	541731	< 250.		UG/L	2/17/94	N	m-Dichlorobenzene (1,3)
BWTU-2-3-CS	94.02162	106467	< 250.		UG/L	2/17/94	N	p-Dichlorobenzene (1,4)
BWTU-2-3-CS	94.02162	75718	< 500.		UG/L	2/17/94	N	Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-3-CS	94.02162	75343	< 250.		UG/L	2/17/94	N	1,1-Dichloroethane
BWTU-2-3-CS	94.02162	107062	< 250.		UG/L	2/17/94	N	1,2-Dichloroethane
BWTU-2-3-CS	94.02162	75354	< 250.		UG/L	2/17/94	N	1,1-Dichloroethene
BWTU-2-3-CS	94.02162	156605	< 250.		UG/L	2/17/94	N	trans-1,2-Dichloroethene
BWTU-2-3-CS	94.02162	156592	< 250.		UG/L	2/17/94	N	cis-1,2-Dichloroethylene
BWTU-2-3-CS	94.02162	78875	< 250.		UG/L	2/17/94	N	1,2-Dichloropropane
BWTU-2-3-CS	94.02162	142289	< 250.		UG/L	2/17/94	N	1,3-Dichloropropane
BWTU-2-3-CS	94.02162	594207	< 250.		UG/L	2/17/94	N	2,2-Dichloropropane
BWTU-2-3-CS	94.02162	563586	< 250.		UG/L	2/17/94	N	1,1-Dichloropropene
BWTU-2-3-CS	94.02162	10061015	< 250.		UG/L	2/17/94	N	cis-1,3-Dichloropropene
BWTU-2-3-CS	94.02162	10061026	< 250.		UG/L	2/17/94	N	trans-1,3-Dichloropropene
BWTU-2-3-CS	94.02162	100414	< 250.		UG/L	2/17/94	N	Ethylbenzene
BWTU-2-3-CS	94.02162	106934	< 250.		UG/L	2/17/94	N	Ethylene dibromide
BWTU-2-3-CS	94.02162	591786	< 1000.		UG/L	2/17/94	N	2-Hexanone
BWTU-2-3-CS	94.02162	98828	< 250.		UG/L	2/17/94	N	Isopropylbenzene
BWTU-2-3-CS	94.02162	99876	< 250.		UG/L	2/17/94	N	4-Isopropyltoluene
BWTU-2-3-CS	94.02162	74884	< 250.		UG/L	2/17/94	N	Methyl iodide
BWTU-2-3-CS	94.02162	108101	< 1000.		UG/L	2/17/94	N	4-Methyl-2-pentanone
BWTU-2-3-CS	94.02162	75092	< 250.		UG/L	2/17/94	N	Methylene chloride
BWTU-2-3-CS	94.02162	103651	< 250.		UG/L	2/17/94	N	Propylbenzene
BWTU-2-3-CS	94.02162	100425	< 250.		UG/L	2/17/94	N	Styrene
BWTU-2-3-CS	94.02162	630206	< 250.		UG/L	2/17/94	N	1,1,1,2-Tetrachloroethane
BWTU-2-3-CS	94.02162	79345	< 250.		UG/L	2/17/94	N	1,1,2,2-Tetrachloroethane
BWTU-2-3-CS	94.02162	127184	< 250.		UG/L	2/17/94	N	Tetrachloroethylene
BWTU-2-3-CS	94.02162	108883	< 250.		UG/L	2/17/94	N	Toluene
BWTU-2-3-CS	94.02162	76131	< 250.		UG/L	2/17/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-2-3-CS	94.02162	71556	< 250.		UG/L	2/17/94	N	1,1,1-Trichloroethane
BWTU-2-3-CS	94.02162	79005	< 250.		UG/L	2/17/94	N	1,1,2-Trichloroethane
BWTU-2-3-CS	94.02162	79016	< 250.		UG/L	2/17/94	N	Trichloroethene
BWTU-2-3-CS	94.02162	75694	< 250.		UG/L	2/17/94	N	Trichlorofluoromethane
BWTU-2-3-CS	94.02162	96184	< 250.		UG/L	2/17/94	N	1,2,3-Trichloropropane
BWTU-2-3-CS	94.02162	95636	< 250.		UG/L	2/17/94	N	1,2,4-Trimethylbenzene
BWTU-2-3-CS	94.02162	108678	< 250.		UG/L	2/17/94	N	1,3,5-Trimethylbenzene
BWTU-2-3-CS	94.02162	75014	< 500.		UG/L	2/17/94	N	Vinyl chloride
BWTU-2-3-CS	94.02162	1330207	< 250.		UG/L	2/17/94	N	Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.02162

none

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LCO on 17-Feb-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: DON DALE PROGRAM CODE: M36A NOTEBOOK: PAGE:

OWNER: JEF GROUP: MAIL-STOP: PHONE: TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02164 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/11/94 Date Analyzed: 2/11/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-DS	94.02164	67641	1600.	480.	UG/L	2/17/94	N	Acetone
BWTU-1-3-DS	94.02164	71432	< 130.		UG/L	2/17/94	N	Benzene
BWTU-1-3-DS	94.02164	108861	< 130.		UG/L	2/17/94	N	Bromobenzene
BWTU-1-3-DS	94.02164	74975	< 130.		UG/L	2/17/94	N	Bromochloromethane
BWTU-1-3-DS	94.02164	75274	< 130.		UG/L	2/17/94	N	Bromodichloromethane
BWTU-1-3-DS	94.02164	75252	< 130.		UG/L	2/17/94	N	Bromoform
BWTU-1-3-DS	94.02164	74839	< 260.		UG/L	2/17/94	N	Bromomethane
BWTU-1-3-DS	94.02164	78933	940.	282.	UG/L	2/17/94	N	2-Butanone
BWTU-1-3-DS	94.02164	104518	< 130.		UG/L	2/17/94	N	n-Butylbenzene
BWTU-1-3-DS	94.02164	135988	< 130.		UG/L	2/17/94	N	sec-Butylbenzene
BWTU-1-3-DS	94.02164	98066	< 130.		UG/L	2/17/94	N	tert-Butylbenzene
BWTU-1-3-DS	94.02164	75150	< 130.		UG/L	2/17/94	N	Carbon disulfide
BWTU-1-3-DS	94.02164	56235	< 130.		UG/L	2/17/94	N	Carbon tetrachloride
BWTU-1-3-DS	94.02164	108907	< 130.		UG/L	2/17/94	N	Chlorobenzene
BWTU-1-3-DS	94.02164	124481	< 130.		UG/L	2/17/94	N	Chlorodibromomethane
BWTU-1-3-DS	94.02164	75003	< 260.		UG/L	2/17/94	N	Chloroethane
BWTU-1-3-DS	94.02164	67663	< 130.		UG/L	2/17/94	N	Chloroform
BWTU-1-3-DS	94.02164	74873	< 260.		UG/L	2/17/94	N	Chloromethane
BWTU-1-3-DS	94.02164	95498	< 130.		UG/L	2/17/94	N	o-Chlorotoluene
BWTU-1-3-DS	94.02164	106434	< 130.		UG/L	2/17/94	N	p-Chlorotoluene
BWTU-1-3-DS	94.02164	96128	< 260.		UG/L	2/17/94	N	1,2-Dibromo-3-chloropropane
BWTU-1-3-DS	94.02164	74953	< 130.		UG/L	2/17/94	N	Dibromomethane
BWTU-1-3-DS	94.02164	95501	< 130.		UG/L	2/17/94	N	o-Dichlorobenzene (1,2)
BWTU-1-3-DS	94.02164	541731	< 130.		UG/L	2/17/94	N	m-Dichlorobenzene (1,3)
BWTU-1-3-DS	94.02164	106467	< 130.		UG/L	2/17/94	N	p-Dichlorobenzene (1,4)
BWTU-1-3-DS	94.02164	75718	< 260.		UG/L	2/17/94	N	Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-DS	94.02164	75343	< 130.		UG/L	2/17/94	N	1,1-Dichloroethane
BWTU-1-3-DS	94.02164	107062	< 130.		UG/L	2/17/94	N	1,2-Dichloroethane
BWTU-1-3-DS	94.02164	75354	< 130.		UG/L	2/17/94	N	1,1-Dichloroethene
BWTU-1-3-DS	94.02164	156605	< 130.		UG/L	2/17/94	N	trans-1,2-Dichloroethene
BWTU-1-3-DS	94.02164	156592	< 130.		UG/L	2/17/94	N	cis-1,2-Dichloroethylene
BWTU-1-3-DS	94.02164	78875	< 130.		UG/L	2/17/94	N	1,2-Dichloropropane
BWTU-1-3-DS	94.02164	142289	< 130.		UG/L	2/17/94	N	1,3-Dichloropropane
BWTU-1-3-DS	94.02164	594207	< 130.		UG/L	2/17/94	N	2,2-Dichloropropane
BWTU-1-3-DS	94.02164	563586	< 130.		UG/L	2/17/94	N	1,1-Dichloropropene
BWTU-1-3-DS	94.02164	10061015	< 130.		UG/L	2/17/94	N	cis-1,3-Dichloropropene
BWTU-1-3-DS	94.02164	10061026	< 130.		UG/L	2/17/94	N	trans-1,3-Dichloropropene
BWTU-1-3-DS	94.02164	100414	< 130.		UG/L	2/17/94	N	Ethylbenzene
BWTU-1-3-DS	94.02164	106934	< 130.		UG/L	2/17/94	N	Ethylene dibromide
BWTU-1-3-DS	94.02164	591786	< 520.		UG/L	2/17/94	N	2-Hexanone
BWTU-1-3-DS	94.02164	98828	< 130.		UG/L	2/17/94	N	Isopropylbenzene
BWTU-1-3-DS	94.02164	99876	< 130.		UG/L	2/17/94	N	4-Isopropyltoluene
BWTU-1-3-DS	94.02164	74884	< 130.		UG/L	2/17/94	N	Methyl iodide
BWTU-1-3-DS	94.02164	108101	< 520.		UG/L	2/17/94	N	4-Methyl-2-pentanone
BWTU-1-3-DS	94.02164	75092	< 130.		UG/L	2/17/94	N	Methylene chloride
BWTU-1-3-DS	94.02164	103651	< 130.		UG/L	2/17/94	N	Propylbenzene
BWTU-1-3-DS	94.02164	100425	< 130.		UG/L	2/17/94	N	Styrene
BWTU-1-3-DS	94.02164	630206	< 130.		UG/L	2/17/94	N	1,1,1,2-Tetrachloroethane
BWTU-1-3-DS	94.02164	79345	< 130.		UG/L	2/17/94	N	1,1,2,2-Tetrachloroethane
BWTU-1-3-DS	94.02164	127184	< 130.		UG/L	2/17/94	N	Tetrachloroethylene
BWTU-1-3-DS	94.02164	108883	< 130.		UG/L	2/17/94	N	Toluene
BWTU-1-3-DS	94.02164	76131	< 130.		UG/L	2/17/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-1-3-DS	94.02164	71556	< 130.		UG/L	2/17/94	N	1,1,1-Trichloroethane
BWTU-1-3-DS	94.02164	79005	< 130.		UG/L	2/17/94	N	1,1,2-Trichloroethane
BWTU-1-3-DS	94.02164	79016	< 130.		UG/L	2/17/94	N	Trichloroethene
BWTU-1-3-DS	94.02164	75694	< 130.		UG/L	2/17/94	N	Trichlorofluoromethane
BWTU-1-3-DS	94.02164	96184	< 130.		UG/L	2/17/94	N	1,2,3-Trichloropropane
BWTU-1-3-DS	94.02164	95636	< 130.		UG/L	2/17/94	N	1,2,4-Trimethylbenzene
BWTU-1-3-DS	94.02164	108678	< 130.		UG/L	2/17/94	N	1,3,5-Trimethylbenzene
BWTU-1-3-DS	94.02164	75014	< 260.		UG/L	2/17/94	N	Vinyl chloride
BWTU-1-3-DS	94.02164	1330207	< 130.		UG/L	2/17/94	N	Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.02164

none

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LCO on 17-Feb-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: DON DALE PROGRAM CODE: M36A NOTEBOOK: PAGE:

OWNER: JEF GROUP: MAIL-STOP: PHONE: TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02166 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/13/94 Date Analyzed: 2/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-3-DS	94.02166	67641	< 1000.		UG/L	2/17/94	N	Acetone
BWTU-2-3-DS	94.02166	71432	< 250.		UG/L	2/17/94	N	Benzene
BWTU-2-3-DS	94.02166	108861	< 250.		UG/L	2/17/94	N	Bromobenzene
BWTU-2-3-DS	94.02166	74975	< 250.		UG/L	2/17/94	N	Bromochloromethane
BWTU-2-3-DS	94.02166	75274	< 250.		UG/L	2/17/94	N	Bromodichloromethane
BWTU-2-3-DS	94.02166	75252	< 250.		UG/L	2/17/94	N	Bromoform
BWTU-2-3-DS	94.02166	74839	< 500.		UG/L	2/17/94	N	Bromomethane
BWTU-2-3-DS	94.02166	78933	< 1000.		UG/L	2/17/94	N	2-Butanone
BWTU-2-3-DS	94.02166	104518	< 250.		UG/L	2/17/94	N	n-Butylbenzene
BWTU-2-3-DS	94.02166	135988	< 250.		UG/L	2/17/94	N	sec-Butylbenzene
BWTU-2-3-DS	94.02166	98066	< 250.		UG/L	2/17/94	N	tert-Butylbenzene
BWTU-2-3-DS	94.02166	75150	< 250.		UG/L	2/17/94	N	Carbon disulfide
BWTU-2-3-DS	94.02166	56235	< 250.		UG/L	2/17/94	N	Carbon tetrachloride
BWTU-2-3-DS	94.02166	108907	< 250.		UG/L	2/17/94	N	Chlorobenzene
BWTU-2-3-DS	94.02166	124481	< 250.		UG/L	2/17/94	N	Chlorodibromomethane
BWTU-2-3-DS	94.02166	75003	< 500.		UG/L	2/17/94	N	Chloroethane
BWTU-2-3-DS	94.02166	67663	< 250.		UG/L	2/17/94	N	Chloroform
BWTU-2-3-DS	94.02166	74873	< 500.		UG/L	2/17/94	N	Chloromethane
BWTU-2-3-DS	94.02166	95498	< 250.		UG/L	2/17/94	N	o-Chlorotoluene
BWTU-2-3-DS	94.02166	106434	< 250.		UG/L	2/17/94	N	p-Chlorotoluene
BWTU-2-3-DS	94.02166	96128	< 500.		UG/L	2/17/94	N	1,2-Dibromo-3-chloropropane
BWTU-2-3-DS	94.02166	74953	< 250.		UG/L	2/17/94	N	Dibromomethane
BWTU-2-3-DS	94.02166	95501	< 250.		UG/L	2/17/94	N	o-Dichlorobenzene (1,2)
BWTU-2-3-DS	94.02166	541731	< 250.		UG/L	2/17/94	N	m-Dichlorobenzene (1,3)
BWTU-2-3-DS	94.02166	106467	< 250.		UG/L	2/17/94	N	p-Dichlorobenzene (1,4)
BWTU-2-3-DS	94.02166	75718	< 500.		UG/L	2/17/94	N	Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-2-3-DS	94.02166	75343	< 250.		UG/L	2/17/94	N	1,1-Dichloroethane
BWTU-2-3-DS	94.02166	107062	< 250.		UG/L	2/17/94	N	1,2-Dichloroethane
BWTU-2-3-DS	94.02166	75354	< 250.		UG/L	2/17/94	N	1,1-Dichloroethene
BWTU-2-3-DS	94.02166	156605	< 250.		UG/L	2/17/94	N	trans-1,2-Dichloroethene
BWTU-2-3-DS	94.02166	156592	< 250.		UG/L	2/17/94	N	cis-1,2-Dichloroethylene
BWTU-2-3-DS	94.02166	78875	< 250.		UG/L	2/17/94	N	1,2-Dichloropropane
BWTU-2-3-DS	94.02166	142289	< 250.		UG/L	2/17/94	N	1,3-Dichloropropane
BWTU-2-3-DS	94.02166	594207	< 250.		UG/L	2/17/94	N	2,2-Dichloropropane
BWTU-2-3-DS	94.02166	563586	< 250.		UG/L	2/17/94	N	1,1-Dichloropropene
BWTU-2-3-DS	94.02166	10061015	< 250.		UG/L	2/17/94	N	cis-1,3-Dichloropropene
BWTU-2-3-DS	94.02166	10061026	< 250.		UG/L	2/17/94	N	trans-1,3-Dichloropropene
BWTU-2-3-DS	94.02166	100414	< 250.		UG/L	2/17/94	N	Ethylbenzene
BWTU-2-3-DS	94.02166	106934	< 250.		UG/L	2/17/94	N	Ethylene dibromide
BWTU-2-3-DS	94.02166	591786	< 1000.		UG/L	2/17/94	N	2-Hexanone
BWTU-2-3-DS	94.02166	98828	< 250.		UG/L	2/17/94	N	Isopropylbenzene
BWTU-2-3-DS	94.02166	99876	< 250.		UG/L	2/17/94	N	4-Isopropyltoluene
BWTU-2-3-DS	94.02166	74884	< 250.		UG/L	2/17/94	N	Methyl iodide
BWTU-2-3-DS	94.02166	108101	< 1000.		UG/L	2/17/94	N	4-Methyl-2-pentanone
BWTU-2-3-DS	94.02166	75092	< 250.		UG/L	2/17/94	N	Methylene chloride
BWTU-2-3-DS	94.02166	103651	< 250.		UG/L	2/17/94	N	Propylbenzene
BWTU-2-3-DS	94.02166	100425	< 250.		UG/L	2/17/94	N	Styrene
BWTU-2-3-DS	94.02166	630206	< 250.		UG/L	2/17/94	N	1,1,1,2-Tetrachloroethane
BWTU-2-3-DS	94.02166	79345	< 250.		UG/L	2/17/94	N	1,1,2,2-Tetrachloroethane
BWTU-2-3-DS	94.02166	127184	< 250.		UG/L	2/17/94	N	Tetrachloroethylene
BWTU-2-3-DS	94.02166	108883	< 250.		UG/L	2/17/94	N	Toluene
BWTU-2-3-DS	94.02166	76131	< 250.		UG/L	2/17/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-2-3-DS	94.02166	71556	< 250.		UG/L	2/17/94	N	1,1,1-Trichloroethane
BWTU-2-3-DS	94.02166	79005	< 250.		UG/L	2/17/94	N	1,1,2-Trichloroethane
BWTU-2-3-DS	94.02166	79016	< 250.		UG/L	2/17/94	N	Trichloroethene
BWTU-2-3-DS	94.02166	75694	< 250.		UG/L	2/17/94	N	Trichlorofluoromethane
BWTU-2-3-DS	94.02166	96184	< 250.		UG/L	2/17/94	N	1,2,3-Trichloropropane
BWTU-2-3-DS	94.02166	95636	< 250.		UG/L	2/17/94	N	1,2,4-Trimethylbenzene
BWTU-2-3-DS	94.02166	108678	< 250.		UG/L	2/17/94	N	1,3,5-Trimethylbenzene
BWTU-2-3-DS	94.02166	75014	< 500.		UG/L	2/17/94	N	Vinyl chloride
BWTU-2-3-DS	94.02166	1330207	< 250.		UG/L	2/17/94	N	Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.02166

none

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LCO on 17-Feb-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: DON DALE PROGRAM CODE: M36A NOTEBOOK: PAGE:

OWNER: JEF GROUP: MAIL-STOP: PHONE: TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.02176 Date Collected: 2/04/94 Date Received: 2/09/94 Date Extracted: 2/10/94 Date Analyzed: 2/10/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-CSA	94.02176	67641	530.	159.	UG/L	2/17/94	N	Acetone
BWTU-1-3-CSA	94.02176	71432	< 50.		UG/L	2/17/94	N	Benzene
BWTU-1-3-CSA	94.02176	108861	< 50.		UG/L	2/17/94	N	Bromobenzene
BWTU-1-3-CSA	94.02176	74975	< 50.		UG/L	2/17/94	N	Bromochloromethane
BWTU-1-3-CSA	94.02176	75274	< 50.		UG/L	2/17/94	N	Bromodichloromethane
BWTU-1-3-CSA	94.02176	75252	< 50.		UG/L	2/17/94	N	Bromoform
BWTU-1-3-CSA	94.02176	74839	< 100.		UG/L	2/17/94	N	Bromomethane
BWTU-1-3-CSA	94.02176	78933	290.	87.	UG/L	2/17/94	N	2-Butanone
BWTU-1-3-CSA	94.02176	104518	< 50.		UG/L	2/17/94	N	n-Butylbenzene
BWTU-1-3-CSA	94.02176	135988	< 50.		UG/L	2/17/94	N	sec-Butylbenzene
BWTU-1-3-CSA	94.02176	98066	< 50.		UG/L	2/17/94	N	tert-Butylbenzene
BWTU-1-3-CSA	94.02176	75150	< 50.		UG/L	2/17/94	N	Carbon disulfide
BWTU-1-3-CSA	94.02176	56235	< 50.		UG/L	2/17/94	N	Carbon tetrachloride
BWTU-1-3-CSA	94.02176	108907	< 50.		UG/L	2/17/94	N	Chlorobenzene
BWTU-1-3-CSA	94.02176	124481	< 50.		UG/L	2/17/94	N	Chlorodibromomethane
BWTU-1-3-CSA	94.02176	75003	< 100.		UG/L	2/17/94	N	Chloroethane
BWTU-1-3-CSA	94.02176	67663	< 50.		UG/L	2/17/94	N	Chloroform
BWTU-1-3-CSA	94.02176	74873	< 100.		UG/L	2/17/94	N	Chloromethane
BWTU-1-3-CSA	94.02176	95498	< 50.		UG/L	2/17/94	N	o-Chlorotoluene
BWTU-1-3-CSA	94.02176	106434	< 50.		UG/L	2/17/94	N	p-Chlorotoluene
BWTU-1-3-CSA	94.02176	96128	< 100.		UG/L	2/17/94	N	1,2-Dibromo-3-chloropropane
BWTU-1-3-CSA	94.02176	74953	< 50.		UG/L	2/17/94	N	Dibromomethane
BWTU-1-3-CSA	94.02176	95501	< 50.		UG/L	2/17/94	N	o-Dichlorobenzene (1,2)
BWTU-1-3-CSA	94.02176	541731	< 50.		UG/L	2/17/94	N	m-Dichlorobenzene (1,3)
BWTU-1-3-CSA	94.02176	106467	< 50.		UG/L	2/17/94	N	p-Dichlorobenzene (1,4)
BWTU-1-3-CSA	94.02176	75718	< 100.		UG/L	2/17/94	N	Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-1-3-CSA	94.02176	75343	< 50.		UG/L	2/17/94	N	1,1-Dichloroethane
BWTU-1-3-CSA	94.02176	107062	< 50.		UG/L	2/17/94	N	1,2-Dichloroethane
BWTU-1-3-CSA	94.02176	75354	< 50.		UG/L	2/17/94	N	1,1-Dichloroethene
BWTU-1-3-CSA	94.02176	156605	< 50.		UG/L	2/17/94	N	trans-1,2-Dichloroethene
BWTU-1-3-CSA	94.02176	156592	< 50.		UG/L	2/17/94	N	cis-1,2-Dichloroethylene
BWTU-1-3-CSA	94.02176	78875	< 50.		UG/L	2/17/94	N	1,2-Dichloropropane
BWTU-1-3-CSA	94.02176	142289	< 50.		UG/L	2/17/94	N	1,3-Dichloropropane
BWTU-1-3-CSA	94.02176	594207	< 50.		UG/L	2/17/94	N	2,2-Dichloropropane
BWTU-1-3-CSA	94.02176	563586	< 50.		UG/L	2/17/94	N	1,1-Dichloropropene
BWTU-1-3-CSA	94.02176	10061015	< 50.		UG/L	2/17/94	N	cis-1,3-Dichloropropene
BWTU-1-3-CSA	94.02176	10061026	< 50.		UG/L	2/17/94	N	trans-1,3-Dichloropropene
BWTU-1-3-CSA	94.02176	100414	< 50.		UG/L	2/17/94	N	Ethylbenzene
BWTU-1-3-CSA	94.02176	106934	< 50.		UG/L	2/17/94	N	Ethylene dibromide
BWTU-1-3-CSA	94.02176	591786	< 200.		UG/L	2/17/94	N	2-Hexanone
BWTU-1-3-CSA	94.02176	98828	< 50.		UG/L	2/17/94	N	Isopropylbenzene
BWTU-1-3-CSA	94.02176	99876	< 50.		UG/L	2/17/94	N	4-Isopropyltoluene
BWTU-1-3-CSA	94.02176	74884	< 50.		UG/L	2/17/94	N	Methyl iodide
BWTU-1-3-CSA	94.02176	108101	< 200.		UG/L	2/17/94	N	4-Methyl-2-pentanone
BWTU-1-3-CSA	94.02176	75092	< 50.		UG/L	2/17/94	N	Methylene chloride
BWTU-1-3-CSA	94.02176	103651	< 50.		UG/L	2/17/94	N	Propylbenzene
BWTU-1-3-CSA	94.02176	100425	< 50.		UG/L	2/17/94	N	Styrene
BWTU-1-3-CSA	94.02176	630206	< 50.		UG/L	2/17/94	N	1,1,1,2-Tetrachloroethane
BWTU-1-3-CSA	94.02176	79345	< 50.		UG/L	2/17/94	N	1,1,2,2-Tetrachloroethane
BWTU-1-3-CSA	94.02176	127184	< 50.		UG/L	2/17/94	N	Tetrachloroethylene
BWTU-1-3-CSA	94.02176	108883	< 50.		UG/L	2/17/94	N	Toluene
BWTU-1-3-CSA	94.02176	76131	< 50.		UG/L	2/17/94	N	1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-1-3-CSA	94.02176	71556	< 50.		UG/L	2/17/94	N	1,1,1-Trichloroethane
BWTU-1-3-CSA	94.02176	79005	< 50.		UG/L	2/17/94	N	1,1,2-Trichloroethane
BWTU-1-3-CSA	94.02176	79016	< 50.		UG/L	2/17/94	N	Trichloroethene
BWTU-1-3-CSA	94.02176	75694	< 50.		UG/L	2/17/94	N	Trichlorofluoromethane
BWTU-1-3-CSA	94.02176	96184	< 50.		UG/L	2/17/94	N	1,2,3-Trichloropropane
BWTU-1-3-CSA	94.02176	95636	< 50.		UG/L	2/17/94	N	1,2,4-Trimethylbenzene
BWTU-1-3-CSA	94.02176	108678	< 50.		UG/L	2/17/94	N	1,3,5-Trimethylbenzene
BWTU-1-3-CSA	94.02176	75014	< 100.		UG/L	2/17/94	N	Vinyl chloride
BWTU-1-3-CSA	94.02176	1330207	< 50.		UG/L	2/17/94	N	Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.02176

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: LCO on 17-Feb-1994

REQUEST NUMBER: 16732 MATRIX: W ANALYST: DON DALE PROGRAM CODE: M36A NOTEBOOK: PAGE:

OWNER: JEF GROUP: MAIL-STOP: PHONE: TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.02157 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/11/93 Date Analyzed: 2/11/93

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02157	67641	78.	23.4	UG/L	0.0		2/17/94	OUT OF CONTROL	Acetone
00.20226	94.02157	71432	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Benzene
00.20226	94.02157	108861	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromobenzene
00.20226	94.02157	74975	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromochloromethane
00.20226	94.02157	75274	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromodichloromethane
00.20226	94.02157	75252	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromoform
00.20226	94.02157	74839	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromomethane
00.20226	94.02157	78933	22.	6.6	UG/L	0.0		2/17/94	OUT OF CONTROL	2-Butanone
00.20226	94.02157	104518	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	n-Butylbenzene
00.20226	94.02157	135988	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	sec-Butylbenzene
00.20226	94.02157	98066	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	tert-Butylbenzene
00.20226	94.02157	75150	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon disulfide
00.20226	94.02157	56235	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon tetrachloride
00.20226	94.02157	108907	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorobenzene
00.20226	94.02157	124481	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorodibromomethane
00.20226	94.02157	75003	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloroethane
00.20226	94.02157	67663	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloroform
00.20226	94.02157	74873	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloromethane
00.20226	94.02157	95498	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Chlorotoluene
00.20226	94.02157	106434	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Chlorotoluene
00.20226	94.02157	96128	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02157	74953	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Dibromomethane
00.20226	94.02157	95501	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.02157	541731	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.02157	106467	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.02157	75718	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Dichlorodifluoromethane
00.20226	94.02157	75343	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethane
00.20226	94.02157	107062	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloroethane
00.20226	94.02157	75354	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethene
00.20226	94.02157	156605	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.20226	94.02157	156592	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.20226	94.02157	78875	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloropropane
00.20226	94.02157	142289	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3-Dichloropropane
00.20226	94.02157	594207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	2,2-Dichloropropane
00.20226	94.02157	563586	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloropropene
00.20226	94.02157	10061015	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.20226	94.02157	10061026	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.20226	94.02157	100414	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylbenzene
00.20226	94.02157	106934	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylene dibromide
00.20226	94.02157	591786	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	2-Hexanone
00.20226	94.02157	98828	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Isopropylbenzene
00.20226	94.02157	99876	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Isopropyltoluene
00.20226	94.02157	74884	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methyl iodide
00.20226	94.02157	108101	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Methyl-2-pentanone
00.20226	94.02157	75092	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methylene chloride
00.20226	94.02157	103651	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Propylbenzene
00.20226	94.02157	100425	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Styrene
00.20226	94.02157	630206	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.20226	94.02157	79345	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.20226	94.02157	127184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Tetrachloroethylene
00.20226	94.02157	108883	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Toluene
00.20226	94.02157	76131	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.20226	94.02157	71556	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1-Trichloroethane
00.20226	94.02157	79005	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloroethane
00.20226	94.02157	79016	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichloroethene
00.20226	94.02157	75694	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichlorofluoromethane
00.20226	94.02157	96184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,3-Trichloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02157	95636	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.20226	94.02157	108678	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.20226	94.02157	75014	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Vinyl chloride
00.20226	94.02157	1330207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Results, Sample # 94.02158 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/10/94 Date Analyzed: 2/10/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02158	67641	71.	21.3	UG/L	0.0		2/17/94	OUT OF CONTROL	Acetone
00.20226	94.02158	71432	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Benzene
00.20226	94.02158	108861	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromobenzene
00.20226	94.02158	74975	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromochloromethane
00.20226	94.02158	75274	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromodichloromethane
00.20226	94.02158	75252	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromoform
00.20226	94.02158	74839	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromomethane
00.20226	94.02158	78933	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	2-Butanone
00.20226	94.02158	104518	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	n-Butylbenzene
00.20226	94.02158	135988	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	sec-Butylbenzene
00.20226	94.02158	98066	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	tert-Butylbenzene
00.20226	94.02158	75150	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon disulfide
00.20226	94.02158	56235	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon tetrachloride
00.20226	94.02158	108907	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorobenzene
00.20226	94.02158	124481	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorodibromomethane
00.20226	94.02158	75003	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloroethane
00.20226	94.02158	67663	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloroform

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02158	74873	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloromethane
00.20226	94.02158	95498	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Chlorotoluene
00.20226	94.02158	106434	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Chlorotoluene
00.20226	94.02158	96128	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
00.20226	94.02158	74953	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Dibromomethane
00.20226	94.02158	95501	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.02158	541731	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.02158	106467	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.02158	75718	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Dichlorodifluoromethane
00.20226	94.02158	75343	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethane
00.20226	94.02158	107062	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloroethane
00.20226	94.02158	75354	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethene
00.20226	94.02158	156605	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.20226	94.02158	156592	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.20226	94.02158	78875	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloropropane
00.20226	94.02158	142289	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3-Dichloropropane
00.20226	94.02158	594207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	2,2-Dichloropropane
00.20226	94.02158	563586	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloropropene
00.20226	94.02158	10061015	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.20226	94.02158	10061026	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.20226	94.02158	100414	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylbenzene
00.20226	94.02158	106934	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylene dibromide
00.20226	94.02158	591786	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	2-Hexanone
00.20226	94.02158	98828	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Isopropylbenzene
00.20226	94.02158	99876	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Isopropyltoluene
00.20226	94.02158	74884	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methyl iodide
00.20226	94.02158	108101	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Methyl-2-pentanone
00.20226	94.02158	75092	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methylene chloride
00.20226	94.02158	103651	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Propylbenzene
00.20226	94.02158	100425	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Styrene
00.20226	94.02158	630206	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.20226	94.02158	79345	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.20226	94.02158	127184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Tetrachloroethylene
00.20226	94.02158	108883	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Toluene
00.20226	94.02158	76131	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.20226	94.02158	71556	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1-Trichloroethane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02158	79005	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloroethane
00.20226	94.02158	79016	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichloroethene
00.20226	94.02158	75694	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichlorofluoromethane
00.20226	94.02158	96184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,3-Trichloropropane
00.20226	94.02158	95636	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.20226	94.02158	108678	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.20226	94.02158	75014	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Vinyl chloride
00.20226	94.02158	1330207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Results, Sample # 94.02159 Date Collected: 2/09/94 Date Received: 2/09/94 Date Extracted: 2/13/94 Date Analyzed: 2/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02159	67641	69.	20.7	UG/L	0.0		2/17/94	OUT OF CONTROL	Acetone
00.20226	94.02159	71432	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Benzene
00.20226	94.02159	108861	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromobenzene
00.20226	94.02159	74975	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromochloromethane
00.20226	94.02159	75274	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromodichloromethane
00.20226	94.02159	75252	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromoform
00.20226	94.02159	74839	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromomethane
00.20226	94.02159	78933	41.	12.3	UG/L	0.0		2/17/94	OUT OF CONTROL	2-Butanone
00.20226	94.02159	104518	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	n-Butylbenzene
00.20226	94.02159	135988	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	sec-Butylbenzene
00.20226	94.02159	98066	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	tert-Butylbenzene
00.20226	94.02159	75150	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon disulfide
00.20226	94.02159	56235	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon tetrachloride

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02159	108907	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorobenzene
00.20226	94.02159	124481	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorodibromomethane
00.20226	94.02159	75003	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloroethane
00.20226	94.02159	67663	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloroform
00.20226	94.02159	74873	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloromethane
00.20226	94.02159	95498	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Chlorotoluene
00.20226	94.02159	106434	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Chlorotoluene
00.20226	94.02159	96128	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
00.20226	94.02159	74953	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Dibromomethane
00.20226	94.02159	95501	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.20226	94.02159	541731	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.20226	94.02159	106467	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.20226	94.02159	75718	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Dichlorodifluoromethane
00.20226	94.02159	75343	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethane
00.20226	94.02159	107062	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloroethane
00.20226	94.02159	75354	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethene
00.20226	94.02159	156605	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.20226	94.02159	156592	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.20226	94.02159	78875	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloropropane
00.20226	94.02159	142289	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3-Dichloropropane
00.20226	94.02159	594207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	2,2-Dichloropropane
00.20226	94.02159	563586	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloropropene
00.20226	94.02159	10061015	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.20226	94.02159	10061026	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.20226	94.02159	100414	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylbenzene
00.20226	94.02159	106934	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylene dibromide
00.20226	94.02159	591786	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	2-Hexanone
00.20226	94.02159	98828	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Isopropylbenzene
00.20226	94.02159	99876	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Isopropyltoluene
00.20226	94.02159	74884	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methyl iodide
00.20226	94.02159	108101	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Methyl-2-pentanone
00.20226	94.02159	75092	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methylene chloride
00.20226	94.02159	103651	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Propylbenzene
00.20226	94.02159	100425	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Styrene
00.20226	94.02159	630206	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.20226	94.02159	79345	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.20226	94.02159	127184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Tetrachloroethylene
00.20226	94.02159	108883	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Toluene
00.20226	94.02159	76131	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.20226	94.02159	71556	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1-Trichloroethane
00.20226	94.02159	79005	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloroethane
00.20226	94.02159	79016	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichloroethene
00.20226	94.02159	75694	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichlorofluoromethane
00.20226	94.02159	96184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,3-Trichloropropane
00.20226	94.02159	95636	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.20226	94.02159	108678	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.20226	94.02159	75014	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Vinyl chloride
00.20226	94.02159	1330207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 94.02160 Date Collected: 2/08/94 Date Received: 2/09/94 Date Extracted: 2/11/94 Date Analyzed: 2/11/94

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
94.02160	67641	70.	21.	UG/L	0.0		2/17/94	OUT OF CONTROL	Acetone
94.02160	71432	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Benzene
94.02160	108861	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromobenzene
94.02160	74975	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromochloromethane
94.02160	75274	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromodichloromethane
94.02160	75252	110.	33.	UG/L	98.	5.2	2/17/94	UNDER CONTROL	Bromoform
94.02160	74839	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Bromomethane
94.02160	78933	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	2-Butanone
94.02160	104518	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	n-Butylbenzene
94.02160	135988	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	sec-Butylbenzene
94.02160	98066	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	tert-Butylbenzene
94.02160	75150	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon disulfide
94.02160	56235	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Carbon tetrachloride
94.02160	108907	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorobenzene
94.02160	124481	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Chlorodibromomethane
94.02160	75003	13.	3.9	UG/L	0.0		2/17/94	OUT OF CONTROL	Chloroethane
94.02160	67663	74.	22.2	UG/L	92.	4.9	2/17/94	UNDER CONTROL	Chloroform
94.02160	74873	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Chloromethane
94.02160	95498	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Chlorotoluene
94.02160	106434	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Chlorotoluene
94.02160	96128	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
94.02160	74953	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Dibromomethane
94.02160	95501	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
94.02160	541731	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
94.02160	106467	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
94.02160	75718	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Dichlorodifluoromethane

94.02160	75343	81.	24.3	UG/L	91.	4.8	2/17/94	UNDER CONTROL	1,1-Dichloroethane
94.02160	107062	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloroethane
94.02160	75354	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloroethene
94.02160	156605	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,2-Dichloroethene
94.02160	156592	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,2-Dichloroethylene
94.02160	78875	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2-Dichloropropane
94.02160	142289	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3-Dichloropropane
94.02160	594207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	2,2-Dichloropropane
94.02160	563586	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1-Dichloropropene
94.02160	10061015	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	cis-1,3-Dichloropropene
94.02160	10061026	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	trans-1,3-Dichloropropene
94.02160	100414	58.	17.4	UG/L	88.	4.7	2/17/94	UNDER CONTROL	Ethylbenzene
94.02160	106934	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Ethylene dibromide
94.02160	591786	140.	42.	UG/L	89.	4.7	2/17/94	UNDER CONTROL	2-Hexanone
94.02160	98828	49.	14.7	UG/L	90.	4.8	2/17/94	WARNING 2-3 SIG	Isopropylbenzene
94.02160	99876	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Isopropyltoluene
94.02160	74884	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methyl iodide
94.02160	108101	< 20.		UG/L	0.0		2/17/94	UNDER CONTROL	4-Methyl-2-pentanone
94.02160	75092	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Methylene chloride
94.02160	103651	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Propylbenzene
94.02160	100425	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Styrene
94.02160	630206	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
94.02160	79345	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
94.02160	127184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Tetrachloroethylene
94.02160	108883	59.	17.7	UG/L	86.	4.6	2/17/94	UNDER CONTROL	Toluene
94.02160	76131	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroethane
94.02160	71556	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,1-Trichloroethane
94.02160	79005	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,1,2-Trichloroethane
94.02160	79016	45.	13.5	UG/L	89.	4.7	2/17/94	OUT OF CONTROL	Trichloroethene
94.02160	75694	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Trichlorofluoromethane
94.02160	96184	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,3-Trichloropropane
94.02160	95636	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,2,4-Trimethylbenzene
94.02160	108678	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	1,3,5-Trimethylbenzene
94.02160	75014	< 10.		UG/L	0.0		2/17/94	UNDER CONTROL	Vinyl chloride
94.02160	1330207	< 5.		UG/L	0.0		2/17/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	COMPLETION DATE	SAMPLE TYPE
94.02156	%	64.	98.52	116.56		17-Feb-1994	MS
94.02156	%	78.32	102.36	111.6		17-Feb-1994	MSD
94.02156	%	123.94	100.64	93.74		17-Feb-1994	
94.02157	%	133.56	95.7	90.76		17-Feb-1994	B
94.02158	%	107.86	102.44	92.68		17-Feb-1994	B
94.02159	%	134.	95.42	95.16		17-Feb-1994	B
94.02160	%	114.12	96.4	94.16		17-Feb-1994	
94.02162	%	114.24	95.78	100.96		17-Feb-1994	
94.02164	%	132.32	95.22	94.66		17-Feb-1994	
94.02166	%	64.66	97.18	138.32		17-Feb-1994	
94.02176	%	111.1	102.68	95.5		17-Feb-1994	
EPA Limits:							
Water	%	76 - 114	88 - 110	86 - 115	86 - 115		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121		

********** EM-9 QUALITY ASSURANCE REPORT **********

REPORT NUMBER: 22906

Analyst	Reviewer	Section Leader	QA Officer
2/22/94	2/22/94	2/22/94	2/23/94
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in
'Quality Assurance for Health and Environmental Chemistry: 1991,' LA-12436-MS, Vol. I, pp. 21-22

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ATTACHMENT 2

ANALYTICAL RESULTS FOR SAMPLES FROM STEP 3—INTERNAL RINSE

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 21-Jun-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 321 PROGRAM CODE: XG8B NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08159 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/12/94 Date Analyzed: 5/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-2-CS	94.08159	83329	< 10.		UG/L	6/21/94		Acenaphthene
BWTU-3-2-CS	94.08159	208968	< 10.		UG/L	6/21/94		Acenaphthylene
BWTU-3-2-CS	94.08159	120127	< 10.		UG/L	6/21/94		Anthracene
BWTU-3-2-CS	94.08159	56553	< 10.		UG/L	6/21/94		Benzo[a]anthracene
BWTU-3-2-CS	94.08159	50328	< 10.		UG/L	6/21/94		Benzo[a]pyrene
BWTU-3-2-CS	94.08159	205992	< 10.		UG/L	6/21/94		Benzo[b]fluoranthene
BWTU-3-2-CS	94.08159	191242	< 10.		UG/L	6/21/94		Benzo[g,h,i]perylene
BWTU-3-2-CS	94.08159	207089	< 10.		UG/L	6/21/94		Benzo[k]fluoranthene
BWTU-3-2-CS	94.08159	65850	< 50.		UG/L	6/21/94		Benzoic acid
BWTU-3-2-CS	94.08159	100516	< 10.		UG/L	6/21/94		Benzyl alcohol
BWTU-3-2-CS	94.08159	111911	< 10.		UG/L	6/21/94		Bis(2-chloroethoxy)methane
BWTU-3-2-CS	94.08159	111444	< 10.		UG/L	6/21/94		Bis(2-chloroethyl)ether
BWTU-3-2-CS	94.08159	108601	< 10.		UG/L	6/21/94		Bis(2-chloroisopropyl)ether
BWTU-3-2-CS	94.08159	117817	< 10.		UG/L	6/21/94		Bis(2-ethylhexyl)phthalate
BWTU-3-2-CS	94.08159	101553	< 10.		UG/L	6/21/94		4-Bromophenylphenyl ether
BWTU-3-2-CS	94.08159	85687	< 10.		UG/L	6/21/94		Butyl benzyl phthalate
BWTU-3-2-CS	94.08159	59507	< 10.		UG/L	6/21/94		4-Chloro-3-methylphenol
BWTU-3-2-CS	94.08159	106478	< 10.		UG/L	6/21/94		4-Chloroaniline
BWTU-3-2-CS	94.08159	91587	< 10.		UG/L	6/21/94		2-Chloronaphthalene
BWTU-3-2-CS	94.08159	95578	< 10.		UG/L	6/21/94		o-Chlorophenol
BWTU-3-2-CS	94.08159	7005723	< 10.		UG/L	6/21/94		4-Chlorophenylphenyl ether
BWTU-3-2-CS	94.08159	218019	< 10.		UG/L	6/21/94		Chrysene
BWTU-3-2-CS	94.08159	84742	< 10.		UG/L	6/21/94		Di-n-butyl phthalate
BWTU-3-2-CS	94.08159	117840	< 10.		UG/L	6/21/94		Di-n-octyl phthalate
BWTU-3-2-CS	94.08159	53703	< 10.		UG/L	6/21/94		Dibenzo[a,h]anthracene
BWTU-3-2-CS	94.08159	132649	< 10.		UG/L	6/21/94		Dibenzofuran

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-2-CS	94.08159	95501	< 10.		UG/L	6/21/94		o-Dichlorobenzene (1,2)
BWTU-3-2-CS	94.08159	541731	< 10.		UG/L	6/21/94		m-Dichlorobenzene (1,3)
BWTU-3-2-CS	94.08159	106467	< 10.		UG/L	6/21/94		p-Dichlorobenzene (1,4)
BWTU-3-2-CS	94.08159	91941	< 10.		UG/L	6/21/94		3,3'-Dichlorobenzidine
BWTU-3-2-CS	94.08159	120832	< 10.		UG/L	6/21/94		2,4-Dichlorophenol
BWTU-3-2-CS	94.08159	84662	< 10.		UG/L	6/21/94		Diethyl phthalate
BWTU-3-2-CS	94.08159	131113	< 10.		UG/L	6/21/94		Dimethyl phthalate
BWTU-3-2-CS	94.08159	105679	< 10.		UG/L	6/21/94		2,4-Dimethylphenol
BWTU-3-2-CS	94.08159	51285	< 50.		UG/L	6/21/94		2,4-Dinitrophenol
BWTU-3-2-CS	94.08159	121142	< 10.		UG/L	6/21/94		2,4-Dinitrotoluene
BWTU-3-2-CS	94.08159	606202	< 10.		UG/L	6/21/94		2,6-Dinitrotoluene
BWTU-3-2-CS	94.08159	206440	< 10.		UG/L	6/21/94		Fluoranthene
BWTU-3-2-CS	94.08159	86737	< 10.		UG/L	6/21/94		Fluorene
BWTU-3-2-CS	94.08159	118741	< 10.		UG/L	6/21/94		Hexachlorobenzene
BWTU-3-2-CS	94.08159	87683	< 10.		UG/L	6/21/94		Hexachlorobutadiene
BWTU-3-2-CS	94.08159	77474	< 10.		UG/L	6/21/94		Hexachlorocyclopentadiene
BWTU-3-2-CS	94.08159	67721	< 10.		UG/L	6/21/94		Hexachloroethane
BWTU-3-2-CS	94.08159	193395	< 10.		UG/L	6/21/94		Indeno[1,2,3-cd]pyrene
BWTU-3-2-CS	94.08159	78591	< 10.		UG/L	6/21/94		Isophorone
BWTU-3-2-CS	94.08159	534521	< 50.		UG/L	6/21/94		2-Methyl-4,6-dinitrophenol
BWTU-3-2-CS	94.08159	91576	< 10.		UG/L	6/21/94		2-Methylnaphthalene
BWTU-3-2-CS	94.08159	95487	< 10.		UG/L	6/21/94		2-Methylphenol
BWTU-3-2-CS	94.08159	106445	< 10.		UG/L	6/21/94		4-Methylphenol
BWTU-3-2-CS	94.08159	91203	< 10.		UG/L	6/21/94		Naphthalene
BWTU-3-2-CS	94.08159	88744	< 50.		UG/L	6/21/94		2-Nitroaniline
BWTU-3-2-CS	94.08159	99092	< 50.		UG/L	6/21/94		3-Nitroaniline
BWTU-3-2-CS	94.08159	100016	< 50.		UG/L	6/21/94		4-Nitroaniline
BWTU-3-2-CS	94.08159	98953	< 10.		UG/L	6/21/94		Nitrobenzene
BWTU-3-2-CS	94.08159	88755	< 10.		UG/L	6/21/94		2-Nitrophenol
BWTU-3-2-CS	94.08159	100027	< 50.		UG/L	6/21/94		4-Nitrophenol
BWTU-3-2-CS	94.08159	621647	< 10.		UG/L	6/21/94		N-Nitrosodi-n-propylamine
BWTU-3-2-CS	94.08159	86306	< 10.		UG/L	6/21/94		N-Nitrosodiphenylamine
BWTU-3-2-CS	94.08159	87865	< 50.		UG/L	6/21/94		Pentachlorophenol
BWTU-3-2-CS	94.08159	85018	< 10.		UG/L	6/21/94		Phenanthrene
BWTU-3-2-CS	94.08159	108952	< 10.		UG/L	6/21/94		Phenol
BWTU-3-2-CS	94.08159	129000	< 10.		UG/L	6/21/94		Pyrene

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-2-CS	94.08159	120821	< 10.		UG/L	6/21/94		1,2,4-Trichlorobenzene
BWTU-3-2-CS	94.08159	95954	< 50.		UG/L	6/21/94		2,4,5-Trichlorophenol
BWTU-3-2-CS	94.08159	88062	< 10.		UG/L	6/21/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.08159

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 21-Jun-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 321 PROGRAM CODE: XG8B NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.08165 Date Collected: 5/09/94 Date Received: 5/09/94 Date Extracted: 5/12/94 Date Analyzed: 5/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.08165	83329	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Acenaphthene
00.30879	94.08165	208968	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Acenaphthylene
00.30879	94.08165	120127	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Anthracene
00.30879	94.08165	56553	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[a]anthracene
00.30879	94.08165	50328	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[a]pyrene
00.30879	94.08165	205992	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[b]fluoranthene
00.30879	94.08165	191242	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[g,h,i]perylene
00.30879	94.08165	207089	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[k]fluoranthene
00.30879	94.08165	65850	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzoic acid
00.30879	94.08165	100516	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzyl alcohol
00.30879	94.08165	111911	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
00.30879	94.08165	111444	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroethyl)ether
00.30879	94.08165	108601	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
00.30879	94.08165	117817	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
00.30879	94.08165	101553	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Bromophenylphenyl ether
00.30879	94.08165	85687	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Butyl benzyl phthalate
00.30879	94.08165	59507	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chloro-3-methylphenol
00.30879	94.08165	106478	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chloroaniline
00.30879	94.08165	91587	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Chloronaphthalene
00.30879	94.08165	95578	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	o-Chlorophenol
00.30879	94.08165	7005723	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chlorophenylphenyl ether

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.08165	218019	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Chrysene
00.30879	94.08165	84742	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Di-n-butyl phthalate
00.30879	94.08165	117840	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Di-n-octyl phthalate
00.30879	94.08165	53703	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dibenzo[a,h]anthracene
00.30879	94.08165	132649	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dibenzofuran
00.30879	94.08165	95501	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30879	94.08165	541731	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30879	94.08165	106467	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30879	94.08165	91941	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	3,3'-Dichlorobenzidine
00.30879	94.08165	120832	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dichlorophenol
00.30879	94.08165	84662	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Diethyl phthalate
00.30879	94.08165	131113	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dimethyl phthalate
00.30879	94.08165	105679	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dimethylphenol
00.30879	94.08165	51285	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dinitrophenol
00.30879	94.08165	121142	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dinitrotoluene
00.30879	94.08165	606202	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,6-Dinitrotoluene
00.30879	94.08165	206440	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Fluoranthene
00.30879	94.08165	86737	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Fluorene
00.30879	94.08165	118741	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachlorobenzene
00.30879	94.08165	87683	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachlorobutadiene
00.30879	94.08165	77474	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachlorocyclopentadiene
00.30879	94.08165	67721	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachloroethane
00.30879	94.08165	193395	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
00.30879	94.08165	78591	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Isophorone
00.30879	94.08165	534521	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
00.30879	94.08165	91576	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methylnaphthalene
00.30879	94.08165	95487	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methylphenol
00.30879	94.08165	106445	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Methylphenol
00.30879	94.08165	91203	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Naphthalene
00.30879	94.08165	88744	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Nitroaniline
00.30879	94.08165	99092	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	3-Nitroaniline
00.30879	94.08165	100016	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Nitroaniline
00.30879	94.08165	98953	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Nitrobenzene
00.30879	94.08165	88755	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Nitrophenol
00.30879	94.08165	100027	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Nitrophenol
00.30879	94.08165	621647	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	N-Nitrosodi-n-propylamine

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.08165	86306	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	N-Nitrosodiphenylamine
00.30879	94.08165	87865	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	Pentachlorophenol
00.30879	94.08165	85018	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Phenanthrene
00.30879	94.08165	108952	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Phenol
00.30879	94.08165	129000	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Pyrene
00.30879	94.08165	120821	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	1,2,4-Trichlorobenzene
00.30879	94.08165	95954	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4,5-Trichlorophenol
00.30879	94.08165	88062	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4,6-Trichlorophenol

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 94.08163 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/12/94 Date Analyzed: 5/13/94

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
94.08163	83329	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Acenaphthene
94.08163	208968	69.	20.7	UG/L	108.	5.6	6/21/94	UNDER CONTROL	Acenaphthylene
94.08163	120127	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Anthracene
94.08163	56553	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[a]anthracene
94.08163	50328	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[a]pyrene
94.08163	205992	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[b]fluoranthene
94.08163	191242	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[g,h,i]perylene
94.08163	207089	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[k]fluoranthene
94.08163	65850	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzoic acid
94.08163	100516	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzyl alcohol
94.08163	111911	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
94.08163	111444	50.	15.	UG/L	64.	3.3	6/21/94	UNDER CONTROL	Bis(2-chloroethyl)ether
94.08163	108601	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
94.08163	117817	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
94.08163	101553	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Bromophenylphenyl ether
94.08163	85687	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Butyl benzyl phthalate
94.08163	59507	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chloro-3-methylphenol
94.08163	106478	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chloroaniline
94.08163	91587	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Chloronaphthalene
94.08163	95578	61.	18.3	UG/L	111.	5.8	6/21/94	WARNING 2-3 SIG	o-Chlorophenol
94.08163	7005723	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chlorophenylphenyl ether
94.08163	218019	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Chrysene
94.08163	84742	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Di-n-butyl phthalate
94.08163	117840	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Di-n-octyl phthalate
94.08163	53703	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dibenzo[a,h]anthracene
94.08163	132649	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dibenzofuran

94.08163	[illegible]01	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
94.08163	541731	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
94.08163	106467	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
94.08163	91941	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	3,3'-Dichlorobenzidine
94.08163	120832	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dichlorophenol
94.08163	84662	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Diethyl phthalate
94.08163	131113	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dimethyl phthalate
94.08163	105679	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dimethylphenol
94.08163	51285	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dinitrophenol
94.08163	121142	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4-Dinitrotoluene
94.08163	606202	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,6-Dinitrotoluene
94.08163	206440	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Fluoranthene
94.08163	86737	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Fluorene
94.08163	118741	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachlorobenzene
94.08163	87683	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachlorobutadiene
94.08163	77474	26.	7.8	UG/L	101.	5.3	6/21/94	OUT OF CONTROL	Hexachlorocyclopentadiene
94.08163	67721	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachloroethane
94.08163	193395	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
94.08163	78591	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Isophorone
94.08163	534521	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
94.08163	91576	50.	15.	UG/L	120.	6.2	6/21/94	OUT OF CONTROL	2-Methylnaphthalene
94.08163	95487	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methylphenol
94.08163	106445	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Methylphenol
94.08163	91203	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Naphthalene
94.08163	88744	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Nitroaniline
94.08163	99092	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	3-Nitroaniline
94.08163	100016	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Nitroaniline
94.08163	98953	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Nitrobenzene
94.08163	88755	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Nitrophenol
94.08163	100027	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Nitrophenol
94.08163	621647	71.	21.3	UG/L	93.	4.8	6/21/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
94.08163	86306	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	N-Nitrosodiphenylamine
94.08163	87865	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	Pentachlorophenol
94.08163	85018	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Phenanthrene
94.08163	108952	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Phenol
94.08163	129000	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Pyrene
94.08163	120821	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	1,2,4-Trichlorobenzene
94.08163	95954	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4,5-Trichlorophenol
94.08163	88062	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4,6-Trichlorophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA SEMIVOLATILES

Surrogate 1 = 2-Fluorophenol (CAS # = 367124)
Surrogate 2 = Phenol-d5 (CAS # = 4165622)
Surrogate 3 = Nitrobenzene-d5 (CAS # = 4165600)
Surrogate 4 = 2-Fluorobiphenyl (CAS # = 321608)
Surrogate 5 = 2,4,6-Tribromophenol (CAS # = 118796)
Surrogate 6 = p-Terphenyl-d14 (CAS # =)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	Surrogate 6	COMPLETION DATE
94.08159	%	51.	74.	36.	73.	99.	25.	21-Jun-1994
94.08163	%	59.	69.	38.	82.	111.	30.	21-Jun-1994
94.08165	%	31.	24.	53.	68.	67.	119.	21-Jun-1994
EPA Limits:								
Water	%	21 - 100	10 - 94	35 - 114	43 - 116	10 - 123	33 - 141	
Soil	%	25 - 121	24 - 113	23 - 120	30 - 115	19 - 122	18 - 137	

REPORT NUMBER: 25503

Analyst	Reviewer	Section Leader	QA Officer
	Kenna Kelly		mag
Date	6/21/94	Date	6/21/94

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

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********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 18-Aug-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 321 PROGRAM CODE: XG88 NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08183 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/12/94 Date Analyzed: 5/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-2-DS	94.08183	83329	< 10.		UG/L	8/18/94		Acenaphthene
BWTU-3-2-DS	94.08183	208968	< 10.		UG/L	8/18/94		Acenaphthylene
BWTU-3-2-DS	94.08183	120127	< 10.		UG/L	8/18/94		Anthracene
BWTU-3-2-DS	94.08183	56553	< 10.		UG/L	8/18/94		Benzo[a]anthracene
BWTU-3-2-DS	94.08183	50328	< 10.		UG/L	8/18/94		Benzo[a]pyrene
BWTU-3-2-DS	94.08183	205992	< 10.		UG/L	8/18/94		Benzo[b]fluoranthene
BWTU-3-2-DS	94.08183	191242	< 10.		UG/L	8/18/94		Benzo[g,h,i]perylene
BWTU-3-2-DS	94.08183	207089	< 10.		UG/L	8/18/94		Benzo[k]fluoranthene
BWTU-3-2-DS	94.08183	65850	< 50.		UG/L	8/18/94		Benzoic acid
BWTU-3-2-DS	94.08183	100516	< 10.		UG/L	8/18/94		Benzyl alcohol
BWTU-3-2-DS	94.08183	111911	< 10.		UG/L	8/18/94		Bis(2-chloroethoxy)methane
BWTU-3-2-DS	94.08183	111444	< 10.		UG/L	8/18/94		Bis(2-chloroethyl)ether
BWTU-3-2-DS	94.08183	108601	< 10.		UG/L	8/18/94		Bis(2-chloroisopropyl)ether
BWTU-3-2-DS	94.08183	117817	18.	5.4	UG/L	8/18/94		Bis(2-ethylhexyl)phthalate
BWTU-3-2-DS	94.08183	101553	< 10.		UG/L	8/18/94		4-Bromophenylphenyl ether
BWTU-3-2-DS	94.08183	85687	< 10.		UG/L	8/18/94		Butyl benzyl phthalate
BWTU-3-2-DS	94.08183	59507	< 10.		UG/L	8/18/94		4-Chloro-3-methylphenol
BWTU-3-2-DS	94.08183	106478	< 10.		UG/L	8/18/94		4-Chloroaniline
BWTU-3-2-DS	94.08183	91587	< 10.		UG/L	8/18/94		2-Chloronaphthalene
BWTU-3-2-DS	94.08183	95578	< 10.		UG/L	8/18/94		o-Chlorophenol
BWTU-3-2-DS	94.08183	7005723	< 10.		UG/L	8/18/94		4-Chlorophenylphenyl ether
BWTU-3-2-DS	94.08183	218019	< 10.		UG/L	8/18/94		Chrysene
BWTU-3-2-DS	94.08183	84742	< 10.		UG/L	8/18/94		Di-n-butyl phthalate
BWTU-3-2-DS	94.08183	117840	< 10.		UG/L	8/18/94		Di-n-octyl phthalate
BWTU-3-2-DS	94.08183	53703	< 10.		UG/L	8/18/94		Dibenzo[a,h]anthracene
BWTU-3-2-DS	94.08183	132649	< 10.		UG/L	8/18/94		Dibenzofuran

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-2-DS	94.08183	95501	< 10.		UG/L	8/18/94		o-Dichlorobenzene (1,2)
BWTU-3-2-DS	94.08183	541731	< 10.		UG/L	8/18/94		m-Dichlorobenzene (1,3)
BWTU-3-2-DS	94.08183	106467	< 10.		UG/L	8/18/94		p-Dichlorobenzene (1,4)
BWTU-3-2-DS	94.08183	91941	< 10.		UG/L	8/18/94		3,3'-Dichlorobenzidine
BWTU-3-2-DS	94.08183	120832	< 10.		UG/L	8/18/94		2,4-Dichlorophenol
BWTU-3-2-DS	94.08183	84662	< 10.		UG/L	8/18/94		Diethyl phthalate
BWTU-3-2-DS	94.08183	131113	< 10.		UG/L	8/18/94		Dimethyl phthalate
BWTU-3-2-DS	94.08183	105679	< 10.		UG/L	8/18/94		2,4-Dimethylphenol
BWTU-3-2-DS	94.08183	51285	< 50.		UG/L	8/18/94		2,4-Dinitrophenol
BWTU-3-2-DS	94.08183	121142	< 10.		UG/L	8/18/94		2,4-Dinitrotoluene
BWTU-3-2-DS	94.08183	606202	< 10.		UG/L	8/18/94		2,6-Dinitrotoluene
BWTU-3-2-DS	94.08183	206440	< 10.		UG/L	8/18/94		Fluoranthene
BWTU-3-2-DS	94.08183	86737	< 10.		UG/L	8/18/94		Fluorene
BWTU-3-2-DS	94.08183	118741	< 10.		UG/L	8/18/94		Hexachlorobenzene
BWTU-3-2-DS	94.08183	87683	< 10.		UG/L	8/18/94		Hexachlorobutadiene
BWTU-3-2-DS	94.08183	77474	< 10.		UG/L	8/18/94		Hexachlorocyclopentadiene
BWTU-3-2-DS	94.08183	67721	< 10.		UG/L	8/18/94		Hexachloroethane
BWTU-3-2-DS	94.08183	193395	< 10.		UG/L	8/18/94		Indeno[1,2,3-cd]pyrene
BWTU-3-2-DS	94.08183	78591	< 10.		UG/L	8/18/94		Isophorone
BWTU-3-2-DS	94.08183	534521	< 50.		UG/L	8/18/94		2-Methyl-4,6-dinitrophenol
BWTU-3-2-DS	94.08183	91576	< 10.		UG/L	8/18/94		2-Methylnaphthalene
BWTU-3-2-DS	94.08183	95487	< 10.		UG/L	8/18/94		2-Methylphenol
BWTU-3-2-DS	94.08183	106445	< 10.		UG/L	8/18/94		4-Methylphenol
BWTU-3-2-DS	94.08183	91203	< 10.		UG/L	8/18/94		Naphthalene
BWTU-3-2-DS	94.08183	88744	< 50.		UG/L	8/18/94		2-Nitroaniline
BWTU-3-2-DS	94.08183	99092	< 50.		UG/L	8/18/94		3-Nitroaniline
BWTU-3-2-DS	94.08183	100016	< 50.		UG/L	8/18/94		4-Nitroaniline
BWTU-3-2-DS	94.08183	98953	< 10.		UG/L	8/18/94		Nitrobenzene
BWTU-3-2-DS	94.08183	88755	< 10.		UG/L	8/18/94		2-Nitrophenol
BWTU-3-2-DS	94.08183	100027	< 50.		UG/L	8/18/94		4-Nitrophenol
BWTU-3-2-DS	94.08183	621647	< 10.		UG/L	8/18/94		N-Nitrosodi-n-propylamine
BWTU-3-2-DS	94.08183	86306	< 10.		UG/L	8/18/94		N-Nitrosodiphenylamine
BWTU-3-2-DS	94.08183	87865	< 50.		UG/L	8/18/94		Pentachlorophenol
BWTU-3-2-DS	94.08183	85018	< 10.		UG/L	8/18/94		Phenanthrene
BWTU-3-2-DS	94.08183	108952	18.	5.4	UG/L	8/18/94		Phenol
BWTU-3-2-DS	94.08183	129000	< 10.		UG/L	8/18/94		Pyrene

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-2-DS	94.08183	120821	< 10.		UG/L	8/18/94		1,2,4-Trichlorobenzene
BWTU-3-2-DS	94.08183	95954	< 50.		UG/L	8/18/94		2,4,5-Trichlorophenol
BWTU-3-2-DS	94.08183	88062	< 10.		UG/L	8/18/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.08183

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 18-Aug-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 321 PROGRAM CODE: XG8B NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results

none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 94.08163 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/12/94 Date Analyzed: 5/13/94

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
94.08163	83329	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Acenaphthene
94.08163	208968	69.	20.7	UG/L	108.	5.6	6/21/94	UNDER CONTROL	Acenaphthylene
94.08163	120127	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Anthracene
94.08163	56553	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[a]anthracene
94.08163	50328	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[a]pyrene
94.08163	205992	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[b]fluoranthene
94.08163	191242	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[g,h,i]perylene
94.08163	207089	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzo[k]fluoranthene
94.08163	65850	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzoic acid
94.08163	100516	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Benzyl alcohol
94.08163	111911	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
94.08163	111444	50.	15.	UG/L	64.	3.3	6/21/94	UNDER CONTROL	Bis(2-chloroethyl)ether
94.08163	108601	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
94.08163	117817	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
94.08163	101553	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Bromophenylphenyl ether
94.08163	85687	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Butyl benzyl phthalate
94.08163	59507	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chloro-3-methylphenol
94.08163	106478	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chloroaniline
94.08163	91587	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Chloronaphthalene
94.08163	95578	61.	18.3	UG/L	111.	5.8	6/21/94	WARNING 2-3 SIG	o-Chlorophenol
94.08163	7005723	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Chlorophenylphenyl ether
94.08163	218019	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Chrysene
94.08163	84742	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Di-n-butyl phthalate
94.08163	117840	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Di-n-octyl phthalate
94.08163	53703	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dibenzo[a,h]anthracene
94.08163	132649	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Dibenzofuran

94.08163	95501	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
94.08163	541731	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
94.08163	106467	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
94.08163	91941	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	3,3'-Dichlorobenzidine
94.08163	120832	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	2,4-Dichlorophenol
94.08163	84662	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	Diethyl phthalate
94.08163	131113	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	Dimethyl phthalate
94.08163	105679	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	2,4-Dimethylphenol
94.08163	51285	< 50.	UG/L	0.0	6/21/94	UNDER CONTROL	2,4-Dinitrophenol
94.08163	121142	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	2,4-Dinitrotoluene
94.08163	606202	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	2,6-Dinitrotoluene
94.08163	206440	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	Fluoranthene
94.08163	86737	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	Fluorene
94.08163	118741	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	Hexachlorobenzene
94.08163	87683	< 10.	UG/L	0.0	6/21/94	UNDER CONTROL	Hexachlorobutadiene

94.08163	77474	26.	7.8	UG/L	101.	5.3	6/21/94	OUT OF CONTROL	Hexachlorocyclopentadiene
94.08163	67721	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Hexachloroethane
94.08163	193395	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
94.08163	78591	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Isophorone
94.08163	534521	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
94.08163	91576	50.	15.	UG/L	120.	6.2	6/21/94	OUT OF CONTROL	2-Methylnaphthalene
94.08163	95487	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Methylphenol
94.08163	106445	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Methylphenol
94.08163	91203	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Naphthalene
94.08163	88744	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Nitroaniline
94.08163	99092	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	3-Nitroaniline
94.08163	100016	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Nitroaniline
94.08163	98953	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Nitrobenzene
94.08163	88755	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2-Nitrophenol
94.08163	100027	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	4-Nitrophenol
94.08163	621647	71.	21.3	UG/L	93.	4.8	6/21/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
94.08163	86306	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	N-Nitrosodiphenylamine
94.08163	87865	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	Pentachlorophenol
94.08163	85018	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Phenanthrene
94.08163	108952	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Phenol
94.08163	129000	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	Pyrene
94.08163	120821	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	1,2,4-Trichlorobenzene
94.08163	95954	< 50.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4,5-Trichlorophenol
94.08163	88062	< 10.		UG/L	0.0		6/21/94	UNDER CONTROL	2,4,6-Trichlorophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA SEMIVOLATILES

Surrogate 1 = 2-Fluorophenol (CAS # = 367124)
Surrogate 2 = Phenol-d5 (CAS # = 4165622)
Surrogate 3 = Nitrobenzene-d5 (CAS # = 4165600)
Surrogate 4 = 2-Fluorobiphenyl (CAS # = 321608)
Surrogate 5 = 2,4,6-Tribromophenol (CAS # = 118796)
Surrogate 6 = p-Terphenyl-d14 (CAS # =)
Surrogate 7 = 4-Chloroanaline (CAS # = 106478)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	Surrogate 6	Surrogate 7	COMPLETION DATE
94.08163	%	59.	69.	38.	82.	111.	30.		21-Jun-1994
94.08183	%	28.	50.	30.	44.	86.	21.		18-Aug-1994
EPA Limits:									
Water	%	21 - 100	10 - 94	35 - 114	43 - 116	10 - 123	33 - 141	34 - 120	
Soil	%	25 - 121	24 - 113	23 - 120	30 - 115	19 - 122	18 - 137		

REPORT NUMBER: 26909

Analyst	Reviewer	Section Leader	QA Officer
	Laura Kelly		
Date	8/18/94 Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

REPORT NUMBER: 26473

********** EM-9 ANALYTICAL REPORT **********

Prepared by: MJT - AMENDED on 1-Aug-1994

REQUEST NUMBER: 17404 MATRIX: W ANALYST: 221 PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

CUSTOMER SAMPLES: Reported data: Originally reported with the wrong technique. mag 8/1/94

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
BWTU-3-1-CS	94.08194	CN	COLOR	< 50.		UG/L	5/16/94	
BWTU-3-1-DS	94.08195	CN	COLOR	< 50.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	AG	ICPES	< 10.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	AL	ICPES	< 100.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	AS	ETVAA	< 4.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	BA	ICPES	30.	3.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	BE	ICPES	< 5.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	CA	ICPES	12000.	1200.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	CD	ICPES	< 5.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	CO	ICPES	< 20.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	CR	ICPES	< 10.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	CU	ICPES	40.	4.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	FE	ICPES	50.	5.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	HG	CVAA	< 0.2		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	K	ICPES	2000.	200.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	MG	ICPES	4000.	400.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	MN	ICPES	< 10.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	NA	ICPES	13000.	1300.	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	NI	ICPES	< 40.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	PB	ETVAA	26.	2.6	UG/L	5/16/94	
BWTU-3-4-CS	94.08197	SB	ETVAA	< 20.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	SE	ETVAA	< 4.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	TL	ETVAA	< 5.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	V	ICPES	< 10.		UG/L	5/16/94	
BWTU-3-4-CS	94.08197	ZN	ICPES	40.	4.	UG/L	5/16/94	
BWTU-3-4-DS	94.08198	AG	ICPES	< 10.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	AL	ICPES	< 100.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	AS	ETVAA	< 4.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	BA	ICPES	30.	3.	UG/L	5/16/94	
BWTU-3-4-DS	94.08198	BE	ICPES	< 5.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	CA	ICPES	13000.	1300.	UG/L	5/16/94	
BWTU-3-4-DS	94.08198	CD	ICPES	< 5.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	CO	ICPES	< 20.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	CR	ICPES	< 10.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	CU	ICPES	< 20.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	FE	ICPES	< 40.		UG/L	5/16/94	
BWTU-3-4-DS	94.08198	HG	CVAA	3.6	0.36	UG/L	5/16/94	

BWTU-3-4-DS	94.08198	K	ICPES	2000.	200.	UG/L	5/16/94
BWTU-3-4-DS	94.08198	MG	ICPES	4000.	400.	UG/L	5/16/94
BWTU-3-4-DS	94.08198	MN	ICPES	< 10.		UG/L	5/16/94
BWTU-3-4-DS	94.08198	NA	ICPES	14000.	1400.	UG/L	5/16/94
BWTU-3-4-DS	94.08198	NI	ICPES	< 40.		UG/L	5/16/94
BWTU-3-4-DS	94.08198	PB	ETVAA	11.	1.1	UG/L	5/16/94
BWTU-3-4-DS	94.08198	SB	ETVAA	< 20.		UG/L	5/16/94
BWTU-3-4-DS	94.08198	SE	ETVAA	< 4.		UG/L	5/16/94
BWTU-3-4-DS	94.08198	TL	ETVAA	< 5.		UG/L	5/16/94
BWTU-3-4-DS	94.08198	V	ICPES	< 10.		UG/L	5/16/94
BWTU-3-4-DS	94.08198	ZN	ICPES	10.	1.	UG/L	5/16/94

CUSTOMER SAMPLE DUPLICATES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
BWTU-3-1-CS	94.08194	CN	COLOR	< 0.05		MG/L	5/16/94	
BWTU-3-4-DS	94.08198	AG	ICPES	< 0.01		MG/L	5/16/94	
BWTU-3-4-DS	94.08198	AL	ICPES	1.13	0.113	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	AS	ETVAA	0.043	0.0043	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	BA	ICPES	1.88	0.188	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	BE	ICPES	0.456	0.0456	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	CA	ICPES	3.43	0.343	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	CD	ICPES	2.18	0.218	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	CO	ICPES	0.504	0.0504	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	CR	ICPES	< 0.01		MG/L	5/16/94	
BWTU-3-4-DS	94.08198	CU	ICPES	0.836	0.0836	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	FE	ICPES	2.88	0.288	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	HG	CVAA	0.0096	0.001	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	K	ICPES	2.24	0.224	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	MG	ICPES	3.47	0.347	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	MN	ICPES	1.23	0.123	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	NA	ICPES	< 0.5		MG/L	5/16/94	
BWTU-3-4-DS	94.08198	NI	ICPES	2.67	0.267	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	PB	ETVAA	1.	0.1	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	SB	ETVAA	3.2	0.32	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	SE	ETVAA	0.041	0.0041	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	TL	ETVAA	< 0.005		MG/L	5/16/94	
BWTU-3-4-DS	94.08198	V	ICPES	14.3	1.43	MG/L	5/16/94	
BWTU-3-4-DS	94.08198	ZN	ICPES	1.21	0.121	MG/L	5/16/94	

MATRIX SPIKES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT
BWTU-3-1-DS	94.08195	CN	COLOR	0.0	99.	%	5/16/94	
BWTU-3-4-DS	94.08198	AG	ICPES	0.0	92.	%	5/16/94	
BWTU-3-4-DS	94.08198	AL	ICPES	0.0	93.	%	5/16/94	
BWTU-3-4-DS	94.08198	AS	ETVAA	0.0	86.	%	5/16/94	
BWTU-3-4-DS	94.08198	BA	ICPES	0.0	94.5	%	5/16/94	
BWTU-3-4-DS	94.08198	BE	ICPES	0.0	96.	%	5/16/94	
BWTU-3-4-DS	94.08198	CA	ICPES	0.0	91.	%	5/16/94	
BWTU-3-4-DS	94.08198	CD	ICPES	0.0	96.	%	5/16/94	
BWTU-3-4-DS	94.08198	CO	ICPES	0.0	95.4	%	5/16/94	
BWTU-3-4-DS	94.08198	CR	ICPES	0.0	98.5	%	5/16/94	
BWTU-3-4-DS	94.08198	CU	ICPES	0.0	95.6	%	5/16/94	

BWTU-3-4-DS	94.08198	FE	ICPES	0.0	96.2	%	5/16/94
BWTU-3-4-DS	94.08198	HG	CVAA	0.0	96.	%	5/16/94
BWTU-3-4-DS	94.08198	K	ICPES	0.0	86.	%	5/16/94
BWTU-3-4-DS	94.08198	MG	ICPES	0.0	89.	%	5/16/94
BWTU-3-4-DS	94.08198	MN	ICPES	0.0	96.	%	5/16/94
BWTU-3-4-DS	94.08198	NA	ICPES	0.0	88.	%	5/16/94
BWTU-3-4-DS	94.08198	NI	ICPES	0.0	97.8	%	5/16/94
BWTU-3-4-DS	94.08198	PB	ETVAA	0.0	95.	%	5/16/94
BWTU-3-4-DS	94.08198	SB	ETVAA	0.0	96.	%	5/16/94
BWTU-3-4-DS	94.08198	SE	ETVAA	0.0	82.	%	5/16/94
BWTU-3-4-DS	94.08198	TL	ETVAA	0.0	90.	%	5/16/94
BWTU-3-4-DS	94.08198	V	ICPES	0.0	94.4	%	5/16/94
BWTU-3-4-DS	94.08198	ZN	ICPES	0.0	98.	%	5/16/94

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REPORT NUMBER: 26473 (continued)

********** EM-9 QUALITY ASSURANCE REPORT *********

Prepared by: MJT - AMENDED on 1-Aug-1994

REQUEST NUMBER: 17404 MATRIX: W ANALYST: 221 PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QC SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT
00.31081	AG	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	AL	< 100.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	AS	< 4.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	BA	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	BE	< 5.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	CA	< 200.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	CD	< 5.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	CN	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	CO	< 20.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	CR	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	CU	< 20.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	FE	< 40.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	HG	< 0.2		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	K	< 1000.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	MG	< 500.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	MN	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	NA	< 500.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	NI	< 40.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	PB	< 5.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	SB	< 20.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	SE	< 4.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	TL	< 5.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	V	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL
00.31081	ZN	< 10.		UG/L	0.0		5/16/94	UNDER CONTROL

SUMMARY OF CONTROL STATUS OF BLIND QC SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT

94.08196 CN	0.4	0.04	MG/L	0.366	0.044	5/16/94	UNDER CONTROL
94.08199 AG	< 0.01		MG/L	0.0		5/16/94	UNDER CONTROL
94.08199 AL	1.1	0.11	MG/L	1.	0.04	5/16/94	UNDER CONTROL
94.08199 AS	2.2	0.22	MG/L	2.	0.09	5/16/94	UNDER CONTROL
94.08199 BA	1.9	0.19	MG/L	2.	0.09	5/16/94	UNDER CONTROL
94.08199 BE	0.45	0.045	MG/L	0.49	0.02	5/16/94	UNDER CONTROL
94.08199 CA	3.4	0.34	MG/L	3.51	0.15	5/16/94	UNDER CONTROL
94.08199 CD	2.1	0.21	MG/L	2.24	0.1	5/16/94	UNDER CONTROL
94.08199 CO	0.5	0.05	MG/L	0.5	0.02	5/16/94	UNDER CONTROL
94.08199 CR	< 0.01		MG/L	0.0		5/16/94	UNDER CONTROL
94.08199 CU	0.83	0.083	MG/L	0.88	0.04	5/16/94	UNDER CONTROL
94.08199 FE	2.8	0.28	MG/L	2.98	0.13	5/16/94	UNDER CONTROL
94.08199 K	2.	0.2	MG/L	2.49	0.11	5/16/94	WARNING 2-3 SIG
94.08199 MG	3.	0.3	MG/L	3.77	0.16	5/16/94	WARNING 2-3 SIG
94.08199 MN	1.2	0.12	MG/L	1.25	0.05	5/16/94	UNDER CONTROL
94.08199 NA	< 0.5		MG/L	0.0		5/16/94	UNDER CONTROL
94.08199 NI	2.6	0.26	MG/L	2.76	0.12	5/16/94	UNDER CONTROL
94.08199 PB	1.1	0.11	MG/L	1.	0.04	5/16/94	UNDER CONTROL
94.08199 SB	3.2	0.32	MG/L	3.49	0.15	5/16/94	UNDER CONTROL
94.08199 SE	2.1	0.21	MG/L	2.	0.09	5/16/94	UNDER CONTROL
94.08199 TL	< 0.005		MG/L	0.0		5/16/94	UNDER CONTROL
94.08199 V	14.	1.4	MG/L	15.	0.65	5/16/94	UNDER CONTROL
94.08199 ZN	1.2	0.12	MG/L	1.25	0.05	5/16/94	UNDER CONTROL

REPORT NUMBER: 26473

Analyst	Reviewer	Section Leader	QA Officer
			mag

Date	Date	Date	Date
			8/1/94

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20.

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********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: MJT on 29-Jun-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 221 PROGRAM CODE: XG8B NOTEBOOK: 0 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08153 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/13/94 Date Analyzed: 5/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-3-DS	94.08153	67641	< 20.		UG/L	6/29/94		Acetone
BWTU-3-3-DS	94.08153	71432	< 5.		UG/L	6/29/94		Benzene
BWTU-3-3-DS	94.08153	108861	< 5.		UG/L	6/29/94		Bromobenzene
BWTU-3-3-DS	94.08153	74975	< 5.		UG/L	6/29/94		Bromochloromethane
BWTU-3-3-DS	94.08153	75274	< 5.		UG/L	6/29/94		Bromodichloromethane
BWTU-3-3-DS	94.08153	75252	< 5.		UG/L	6/29/94		Bromoform
BWTU-3-3-DS	94.08153	74839	< 10.		UG/L	6/29/94		Bromomethane
BWTU-3-3-DS	94.08153	78933	< 20.		UG/L	6/29/94		2-Butanone
BWTU-3-3-DS	94.08153	104518	< 5.		UG/L	6/29/94		n-Butylbenzene
BWTU-3-3-DS	94.08153	135988	< 5.		UG/L	6/29/94		sec-Butylbenzene
BWTU-3-3-DS	94.08153	98066	< 5.		UG/L	6/29/94		tert-Butylbenzene
BWTU-3-3-DS	94.08153	75150	< 5.		UG/L	6/29/94		Carbon disulfide
BWTU-3-3-DS	94.08153	56235	< 5.		UG/L	6/29/94		Carbon tetrachloride
BWTU-3-3-DS	94.08153	108907	< 5.		UG/L	6/29/94		Chlorobenzene
BWTU-3-3-DS	94.08153	124481	< 5.		UG/L	6/29/94		Chlorodibromomethane
BWTU-3-3-DS	94.08153	75003	< 10.		UG/L	6/29/94		Chloroethane
BWTU-3-3-DS	94.08153	67663	< 5.		UG/L	6/29/94		Chloroform
BWTU-3-3-DS	94.08153	74873	< 10.		UG/L	6/29/94		Chloromethane
BWTU-3-3-DS	94.08153	95498	< 5.		UG/L	6/29/94		o-Chlorotoluene
BWTU-3-3-DS	94.08153	106434	< 5.		UG/L	6/29/94		p-Chlorotoluene
BWTU-3-3-DS	94.08153	96128	< 10.		UG/L	6/29/94		1,2-Dibromo-3-chloropropane
BWTU-3-3-DS	94.08153	74953	< 5.		UG/L	6/29/94		Dibromomethane
BWTU-3-3-DS	94.08153	95501	< 5.		UG/L	6/29/94		o-Dichlorobenzene (1,2)
BWTU-3-3-DS	94.08153	541731	< 5.		UG/L	6/29/94		m-Dichlorobenzene (1,3)
BWTU-3-3-DS	94.08153	106467	< 5.		UG/L	6/29/94		p-Dichlorobenzene (1,4)
BWTU-3-3-DS	94.08153	75718	< 10.		UG/L	6/29/94		Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-3-DS	94.08153	75343	< 5.		UG/L	6/29/94		1,1-Dichloroethane
BWTU-3-3-DS	94.08153	107062	< 5.		UG/L	6/29/94		1,2-Dichloroethane
BWTU-3-3-DS	94.08153	75354	< 5.		UG/L	6/29/94		1,1-Dichloroethene
BWTU-3-3-DS	94.08153	156605	< 5.		UG/L	6/29/94		trans-1,2-Dichloroethene
BWTU-3-3-DS	94.08153	156592	< 5.		UG/L	6/29/94		cis-1,2-Dichloroethylene
BWTU-3-3-DS	94.08153	78875	< 5.		UG/L	6/29/94		1,2-Dichloropropane
BWTU-3-3-DS	94.08153	142289	< 5.		UG/L	6/29/94		1,3-Dichloropropane
BWTU-3-3-DS	94.08153	594207	< 5.		UG/L	6/29/94		2,2-Dichloropropane
BWTU-3-3-DS	94.08153	563586	< 5.		UG/L	6/29/94		1,1-Dichloropropene
BWTU-3-3-DS	94.08153	10061015	< 5.		UG/L	6/29/94		cis-1,3-Dichloropropene
BWTU-3-3-DS	94.08153	10061026	< 5.		UG/L	6/29/94		trans-1,3-Dichloropropene
BWTU-3-3-DS	94.08153	100414	< 5.		UG/L	6/29/94		Ethylbenzene
BWTU-3-3-DS	94.08153	106934	< 5.		UG/L	6/29/94		Ethylene dibromide
BWTU-3-3-DS	94.08153	591786	< 20.		UG/L	6/29/94		2-Hexanone
BWTU-3-3-DS	94.08153	98828	< 5.		UG/L	6/29/94		Isopropylbenzene
BWTU-3-3-DS	94.08153	99876	< 5.		UG/L	6/29/94		4-Isopropyltoluene
BWTU-3-3-DS	94.08153	74884	< 5.		UG/L	6/29/94		Methyl iodide
BWTU-3-3-DS	94.08153	108101	< 20.		UG/L	6/29/94		4-Methyl-2-pentanone
BWTU-3-3-DS	94.08153	75092	< 5.		UG/L	6/29/94		Methylene chloride
BWTU-3-3-DS	94.08153	103651	< 5.		UG/L	6/29/94		Propylbenzene
BWTU-3-3-DS	94.08153	100425	< 5.		UG/L	6/29/94		Styrene
BWTU-3-3-DS	94.08153	630206	< 5.		UG/L	6/29/94		1,1,1,2-Tetrachloroethane
BWTU-3-3-DS	94.08153	79345	< 5.		UG/L	6/29/94		1,1,2,2-Tetrachloroethane
BWTU-3-3-DS	94.08153	127184	< 5.		UG/L	6/29/94		Tetrachloroethylene
BWTU-3-3-DS	94.08153	108883	< 5.		UG/L	6/29/94		Toluene
BWTU-3-3-DS	94.08153	76131	< 5.		UG/L	6/29/94		1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-3-3-DS	94.08153	71556	< 5.		UG/L	6/29/94		1,1,1-Trichloroethane
BWTU-3-3-DS	94.08153	79005	< 5.		UG/L	6/29/94		1,1,2-Trichloroethane
BWTU-3-3-DS	94.08153	79016	< 5.		UG/L	6/29/94		Trichloroethene
BWTU-3-3-DS	94.08153	75694	< 10.		UG/L	6/29/94		Trichlorofluoromethane
BWTU-3-3-DS	94.08153	96184	< 5.		UG/L	6/29/94		1,2,3-Trichloropropane
BWTU-3-3-DS	94.08153	95636	< 5.		UG/L	6/29/94		1,2,4-Trimethylbenzene
BWTU-3-3-DS	94.08153	108678	< 5.		UG/L	6/29/94		1,3,5-Trimethylbenzene
BWTU-3-3-DS	94.08153	75014	< 10.		UG/L	6/29/94		Vinyl chloride
BWTU-3-3-DS	94.08153	1330207	< 5.		UG/L	6/29/94		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.08153

none

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: MJT on 29-Jun-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 221 PROGRAM CODE: XG8B NOTEBOOK: 0 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08154 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/13/94 Date Analyzed: 5/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-3-CS	94.08154	67641	< 20.		UG/L	6/29/94		Acetone
BWTU-3-3-CS	94.08154	71432	< 5.		UG/L	6/29/94		Benzene
BWTU-3-3-CS	94.08154	108861	< 5.		UG/L	6/29/94		Bromobenzene
BWTU-3-3-CS	94.08154	74975	< 5.		UG/L	6/29/94		Bromochloromethane
BWTU-3-3-CS	94.08154	75274	< 5.		UG/L	6/29/94		Bromodichloromethane
BWTU-3-3-CS	94.08154	75252	< 5.		UG/L	6/29/94		Bromoform
BWTU-3-3-CS	94.08154	74839	< 10.		UG/L	6/29/94		Bromomethane
BWTU-3-3-CS	94.08154	78933	< 20.		UG/L	6/29/94		2-Butanone
BWTU-3-3-CS	94.08154	104518	< 5.		UG/L	6/29/94		n-Butylbenzene
BWTU-3-3-CS	94.08154	135988	< 5.		UG/L	6/29/94		sec-Butylbenzene
BWTU-3-3-CS	94.08154	98066	< 5.		UG/L	6/29/94		tert-Butylbenzene
BWTU-3-3-CS	94.08154	75150	< 5.		UG/L	6/29/94		Carbon disulfide
BWTU-3-3-CS	94.08154	56235	< 5.		UG/L	6/29/94		Carbon tetrachloride
BWTU-3-3-CS	94.08154	108907	< 5.		UG/L	6/29/94		Chlorobenzene
BWTU-3-3-CS	94.08154	124481	< 5.		UG/L	6/29/94		Chlorodibromomethane
BWTU-3-3-CS	94.08154	75003	< 10.		UG/L	6/29/94		Chloroethane
BWTU-3-3-CS	94.08154	67663	< 5.		UG/L	6/29/94		Chloroform
BWTU-3-3-CS	94.08154	74873	< 10.		UG/L	6/29/94		Chloromethane
BWTU-3-3-CS	94.08154	95498	< 5.		UG/L	6/29/94		o-Chlorotoluene
BWTU-3-3-CS	94.08154	106434	< 5.		UG/L	6/29/94		p-Chlorotoluene
BWTU-3-3-CS	94.08154	96128	< 10.		UG/L	6/29/94		1,2-Dibromo-3-chloropropane
BWTU-3-3-CS	94.08154	74953	< 5.		UG/L	6/29/94		Dibromomethane
BWTU-3-3-CS	94.08154	95501	< 5.		UG/L	6/29/94		o-Dichlorobenzene (1,2)
BWTU-3-3-CS	94.08154	541731	< 5.		UG/L	6/29/94		m-Dichlorobenzene (1,3)
BWTU-3-3-CS	94.08154	106467	< 5.		UG/L	6/29/94		p-Dichlorobenzene (1,4)
BWTU-3-3-CS	94.08154	75718	< 10.		UG/L	6/29/94		Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-3-3-CS	94.08154	75343	< 5.		UG/L	6/29/94		1,1-Dichloroethane
BWTU-3-3-CS	94.08154	107062	< 5.		UG/L	6/29/94		1,2-Dichloroethane
BWTU-3-3-CS	94.08154	75354	< 5.		UG/L	6/29/94		1,1-Dichloroethene
BWTU-3-3-CS	94.08154	156605	< 5.		UG/L	6/29/94		trans-1,2-Dichloroethene
BWTU-3-3-CS	94.08154	156592	< 5.		UG/L	6/29/94		cis-1,2-Dichloroethylene
BWTU-3-3-CS	94.08154	78875	< 5.		UG/L	6/29/94		1,2-Dichloropropane
BWTU-3-3-CS	94.08154	142289	< 5.		UG/L	6/29/94		1,3-Dichloropropane
BWTU-3-3-CS	94.08154	594207	< 5.		UG/L	6/29/94		2,2-Dichloropropane
BWTU-3-3-CS	94.08154	563586	< 5.		UG/L	6/29/94		1,1-Dichloropropene
BWTU-3-3-CS	94.08154	10061015	< 5.		UG/L	6/29/94		cis-1,3-Dichloropropene
BWTU-3-3-CS	94.08154	10061026	< 5.		UG/L	6/29/94		trans-1,3-Dichloropropene
BWTU-3-3-CS	94.08154	100414	< 5.		UG/L	6/29/94		Ethylbenzene
BWTU-3-3-CS	94.08154	106934	< 5.		UG/L	6/29/94		Ethylene dibromide
BWTU-3-3-CS	94.08154	591786	< 20.		UG/L	6/29/94		2-Hexanone
BWTU-3-3-CS	94.08154	98828	< 5.		UG/L	6/29/94		Isopropylbenzene
BWTU-3-3-CS	94.08154	99876	< 5.		UG/L	6/29/94		4-Isopropyltoluene
BWTU-3-3-CS	94.08154	74884	< 5.		UG/L	6/29/94		Methyl iodide
BWTU-3-3-CS	94.08154	108101	< 20.		UG/L	6/29/94		4-Methyl-2-pentanone
BWTU-3-3-CS	94.08154	75092	< 5.		UG/L	6/29/94		Methylene chloride
BWTU-3-3-CS	94.08154	103651	< 5.		UG/L	6/29/94		Propylbenzene
BWTU-3-3-CS	94.08154	100425	< 5.		UG/L	6/29/94		Styrene
BWTU-3-3-CS	94.08154	630206	< 5.		UG/L	6/29/94		1,1,1,2-Tetrachloroethane
BWTU-3-3-CS	94.08154	79345	< 5.		UG/L	6/29/94		1,1,2,2-Tetrachloroethane
BWTU-3-3-CS	94.08154	127184	< 5.		UG/L	6/29/94		Tetrachloroethylene
BWTU-3-3-CS	94.08154	108883	< 5.		UG/L	6/29/94		Toluene
BWTU-3-3-CS	94.08154	76131	< 5.		UG/L	6/29/94		1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-3-3-CS	94.08154	71556	< 5.		UG/L	6/29/94		1,1,1-Trichloroethane
BWTU-3-3-CS	94.08154	79005	< 5.		UG/L	6/29/94		1,1,2-Trichloroethane
BWTU-3-3-CS	94.08154	79016	< 5.		UG/L	6/29/94		Trichloroethene
BWTU-3-3-CS	94.08154	75694	< 10.		UG/L	6/29/94		Trichlorofluoromethane
BWTU-3-3-CS	94.08154	96184	< 5.		UG/L	6/29/94		1,2,3-Trichloropropane
BWTU-3-3-CS	94.08154	95636	< 5.		UG/L	6/29/94		1,2,4-Trimethylbenzene
BWTU-3-3-CS	94.08154	108678	< 5.		UG/L	6/29/94		1,3,5-Trimethylbenzene
BWTU-3-3-CS	94.08154	75014	< 10.		UG/L	6/29/94		Vinyl chloride
BWTU-3-3-CS	94.08154	1330207	< 5.		UG/L	6/29/94		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.08154

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: MJT on 29-Jun-1994

REQUEST NUMBER: 17401 MATRIX: W ANALYST: 221 PROGRAM CODE: XG88 NOTEBOOK: 0 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.08156 Date Collected: 5/09/94 Date Received: 5/09/94 Date Extracted: 5/13/94 Date Analyzed: 5/13/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.08156	67641	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	Acetone
00.30878	94.08156	71432	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Benzene
00.30878	94.08156	108861	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromobenzene
00.30878	94.08156	74975	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromochloromethane
00.30878	94.08156	75274	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromodichloromethane
00.30878	94.08156	75252	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromoform
00.30878	94.08156	74839	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromomethane
00.30878	94.08156	78933	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Butanone
00.30878	94.08156	104518	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	n-Butylbenzene
00.30878	94.08156	135988	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	sec-Butylbenzene
00.30878	94.08156	98066	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	tert-Butylbenzene
00.30878	94.08156	75150	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon disulfide
00.30878	94.08156	56235	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon tetrachloride
00.30878	94.08156	108907	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorobenzene
00.30878	94.08156	124481	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorodibromomethane
00.30878	94.08156	75003	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroethane
00.30878	94.08156	67663	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroform
00.30878	94.08156	74873	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloromethane
00.30878	94.08156	95498	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Chlorotoluene
00.30878	94.08156	106434	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Chlorotoluene
00.30878	94.08156	96128	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.08156	74953	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Dibromomethane
00.30878	94.08156	95501	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30878	94.08156	541731	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30878	94.08156	106467	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30878	94.08156	75718	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Dichlorodifluoromethane
00.30878	94.08156	75343	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethane
00.30878	94.08156	107062	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dichloroethane
00.30878	94.08156	75354	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethene
00.30878	94.08156	156605	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.30878	94.08156	156592	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30878	94.08156	78875	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dichloropropane
00.30878	94.08156	142289	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3-Dichloropropane
00.30878	94.08156	594207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	2,2-Dichloropropane
00.30878	94.08156	563586	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloropropene
00.30878	94.08156	10061015	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.30878	94.08156	10061026	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.30878	94.08156	100414	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Ethylbenzene
00.30878	94.08156	106934	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Ethylene dibromide
00.30878	94.08156	591786	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Hexanone
00.30878	94.08156	98828	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Isopropylbenzene
00.30878	94.08156	99876	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Isopropyltoluene
00.30878	94.08156	74884	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Methyl iodide
00.30878	94.08156	108101	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Methyl-2-pentanone
00.30878	94.08156	75092	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Methylene chloride
00.30878	94.08156	103651	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Propylbenzene
00.30878	94.08156	100425	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Styrene
00.30878	94.08156	630206	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30878	94.08156	79345	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30878	94.08156	127184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Tetrachloroethylene
00.30878	94.08156	108883	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Toluene
00.30878	94.08156	76131	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.30878	94.08156	71556	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,1-Trichloroethane
00.30878	94.08156	79005	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloroethane
00.30878	94.08156	79016	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichloroethene
00.30878	94.08156	75694	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichlorofluoromethane
00.30878	94.08156	96184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,3-Trichloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.08156	95636	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30878	94.08156	108678	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30878	94.08156	75014	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Vinyl chloride
00.30878	94.08156	1330207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 94.08155 Date Collected: 5/06/94 Date Received: 5/09/94 Date Extracted: 5/13/94 Date Analyzed: 5/13/94

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
94.08155	67641	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	Acetone
94.08155	71432	93.	27.9	UG/L	75.	4.	6/29/94	UNDER CONTROL	Benzene
94.08155	108861	82.	24.6	UG/L	82.	4.3	6/29/94	UNDER CONTROL	Bromobenzene
94.08155	74975	77.	23.1	UG/L	79.	4.2	6/29/94	UNDER CONTROL	Bromochloromethane
94.08155	75274	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromodichloromethane
94.08155	75252	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromoform
94.08155	74839	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromomethane
94.08155	78933	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Butanone
94.08155	104518	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	n-Butylbenzene
94.08155	135988	59.	17.7	UG/L	89.	4.7	6/29/94	UNDER CONTROL	sec-Butylbenzene
94.08155	98066	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	tert-Butylbenzene
94.08155	75150	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon disulfide
94.08155	56235	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon tetrachloride
94.08155	108907	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorobenzene
94.08155	124481	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorodibromomethane
94.08155	75003	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroethane
94.08155	67663	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroform
94.08155	74873	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloromethane
94.08155	95498	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Chlorotoluene
94.08155	106434	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Chlorotoluene
94.08155	96128	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
94.08155	74953	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Dibromomethane
94.08155	95501	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
94.08155	541731	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
94.08155	106467	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
94.08155	75718	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Dichlorodifluoromethane

94.08155	75343	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethane
94.08155	107062	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dichloroethane
94.08155	75354	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethene
94.08155	156605	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,2-Dichloroethene
94.08155	156592	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,2-Dichloroethylene
94.08155	78875	92.	27.6	UG/L	77.	4.1	6/29/94	UNDER CONTROL	1,2-Dichloropropane
94.08155	142289	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3-Dichloropropane
94.08155	594207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	2,2-Dichloropropane
94.08155	563586	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloropropene
94.08155	10061015	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,3-Dichloropropene
94.08155	10061026	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,3-Dichloropropene
94.08155	100414	92.	27.6	UG/L	82.	4.4	6/29/94	UNDER CONTROL	Ethylbenzene
94.08155	106934	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Ethylene dibromide
94.08155	591786	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Hexanone
94.08155	98828	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Isopropylbenzene
94.08155	99876	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Isopropyltoluene
94.08155	74884	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Methyl iodide
94.08155	108101	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Methyl-2-pentanone
94.08155	75092	93.	27.9	UG/L	81.	4.3	6/29/94	UNDER CONTROL	Methylene chloride
94.08155	103651	77.	23.1	UG/L	80.	4.2	6/29/94	UNDER CONTROL	Propylbenzene
94.08155	100425	69.	20.7	UG/L	74.	3.9	6/29/94	UNDER CONTROL	Styrene
94.08155	630206	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
94.08155	79345	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
94.08155	127184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Tetrachloroethylene
94.08155	108883	82.	24.6	UG/L	79.	4.2	6/29/94	UNDER CONTROL	Toluene
94.08155	76131	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroethane
94.08155	71556	64.	19.2	UG/L	85.	4.5	6/29/94	UNDER CONTROL	1,1,1-Trichloroethane
94.08155	79005	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloroethane
94.08155	79016	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichloroethene
94.08155	75694	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichlorofluoromethane
94.08155	96184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,3-Trichloropropane
94.08155	95636	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,4-Trimethylbenzene
94.08155	108678	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3,5-Trimethylbenzene
94.08155	75014	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Vinyl chloride
94.08155	1330207	73.	21.9	UG/L	82.	4.3	6/29/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	COMPLETION DATE	SAMPLE TYPE
94.08153	%	86.	108.	101.		86.	29-Jun-1994	
94.08154	%	91.	104.	87.		91.	29-Jun-1994	
94.08155	%	81.	108.	103.		81.	29-Jun-1994	
94.08156	%	92.	103.	88.		92.	29-Jun-1994	B
EPA Limits:								
Water	%	76 - 114	88 - 110	86 - 115	86 - 115	86 - 118		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121			

REPORT NUMBER: 25752

Analyst	Reviewer	Section Leader	QA Officer
	Laura Kelly		mag
Date	6/30/94	Date	6/30/94

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in
'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

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ATTACHMENT 3

ANALYTICAL RESULTS FOR SAMPLES FROM STEP 4—EXTERNAL RINSE

REPORT NUMBER: 26374

********** EM-9 ANALYTICAL REPORT **********

Prepared by: EAJ-AMENDED on 26-Jul-1994

REQUEST NUMBER: 17420 MATRIX: W ANALYST: 221 PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

CUSTOMER SAMPLES: Reported data: Originally reported with the incorrect technique. mag 7/26/94

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
BWTU-4-1-CS	94.08405	CN	COLOR	< 10.		UG/L	5/19/94	
BWTU-4-1-DS	94.08406	CN	COLOR	< 10.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	AG	ICPES	< 10.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	AL	ICPES	< 100.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	AS	ETVAA	< 4.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	BA	ICPES	30.	3.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	BE	ICPES	< 5.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	CA	ICPES	17000.	1700.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	CD	ICPES	< 5.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	CO	ICPES	< 20.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	CR	ICPES	< 10.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	CU	ICPES	20.	2.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	FE	ICPES	50.	5.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	HG	CVAA	< 0.2		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	K	ICPES	3000.	300.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	MG	ICPES	4000.	400.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	MN	ICPES	< 10.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	NA	ICPES	16000.	1600.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	NI	ICPES	< 40.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	PB	ETVAA	7.	0.7	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	SB	ETVAA	< 20.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	SE	ETVAA	6.	0.6	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	TL	ETVAA	< 5.		UG/L	5/19/94	
BWTU-4-4-CS	94.08408	V	ICPES	10.	1.	UG/L	5/19/94	
BWTU-4-4-CS	94.08408	ZN	ICPES	30.	3.	UG/L	5/19/94	
BWTU-4-4-DS	94.08409	AG	ICPES	< 10.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	AL	ICPES	< 100.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	AS	ETVAA	< 4.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	BA	ICPES	30.	3.	UG/L	5/19/94	
BWTU-4-4-DS	94.08409	BE	ICPES	< 5.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	CA	ICPES	17000.	1700.	UG/L	5/19/94	
BWTU-4-4-DS	94.08409	CD	ICPES	< 5.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	CO	ICPES	< 20.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	CR	ICPES	< 10.		UG/L	5/19/94	
BWTU-4-4-DS	94.08409	CU	ICPES	30.	3.	UG/L	5/19/94	
BWTU-4-4-DS	94.08409	FE	ICPES	100.	10.	UG/L	5/19/94	
BWTU-4-4-DS	94.08409	HG	CVAA	< 0.2		UG/L	5/19/94	

BWTU-4-4-DS	94.08409	K	ICPES	3000.	300.	UG/L	5/19/94
BWTU-4-4-DS	94.08409	MG	ICPES	4000.	400.	UG/L	5/19/94
BWTU-4-4-DS	94.08409	MN	ICPES	< 10.		UG/L	5/19/94
BWTU-4-4-DS	94.08409	NA	ICPES	16000.	1600.	UG/L	5/19/94
BWTU-4-4-DS	94.08409	NI	ICPES	< 40.		UG/L	5/19/94
BWTU-4-4-DS	94.08409	PB	ETVAA	10.	1.	UG/L	5/19/94
BWTU-4-4-DS	94.08409	SB	ETVAA	< 20.		UG/L	5/19/94
BWTU-4-4-DS	94.08409	SE	ETVAA	< 4.		UG/L	5/19/94
BWTU-4-4-DS	94.08409	TL	ETVAA	< 5.		UG/L	5/19/94
BWTU-4-4-DS	94.08409	V	ICPES	< 10.		UG/L	5/19/94
BWTU-4-4-DS	94.08409	ZN	ICPES	50.	5.	UG/L	5/19/94

MATRIX SPIKES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT
BWTU-4-4-CS	94.08408	AG	ICPES	0.0	96.	%	5/19/94	
BWTU-4-4-CS	94.08408	AL	ICPES	0.0	92.5	%	5/19/94	
BWTU-4-4-CS	94.08408	AS	ETVAA	0.0	95.	%	5/19/94	
BWTU-4-4-CS	94.08408	BA	ICPES	0.0	100.	%	5/19/94	
BWTU-4-4-CS	94.08408	BE	ICPES	0.0	100.	%	5/19/94	
BWTU-4-4-CS	94.08408	CA	ICPES	0.0	86.	%	5/19/94	
BWTU-4-4-CS	94.08408	CD	ICPES	0.0	98.	%	5/19/94	
BWTU-4-4-CS	94.08408	CO	ICPES	0.0	101.4	%	5/19/94	
BWTU-4-4-CS	94.08408	CR	ICPES	0.0	103.5	%	5/19/94	
BWTU-4-4-CS	94.08408	CU	ICPES	0.0	100.	%	5/19/94	
BWTU-4-4-CS	94.08408	FE	ICPES	0.0	99.6	%	5/19/94	
BWTU-4-4-CS	94.08408	HG	CVAA	0.0	86.	%	5/19/94	
BWTU-4-4-CS	94.08408	K	ICPES	0.0	76.	%	5/19/94	
BWTU-4-4-CS	94.08408	MG	ICPES	0.0	88.2	%	5/19/94	
BWTU-4-4-CS	94.08408	MN	ICPES	0.0	102.4	%	5/19/94	
BWTU-4-4-CS	94.08408	NA	ICPES	0.0	81.2	%	5/19/94	
BWTU-4-4-CS	94.08408	NI	ICPES	0.0	103.8	%	5/19/94	
BWTU-4-4-CS	94.08408	PB	ETVAA	0.0	90.	%	5/19/94	
BWTU-4-4-CS	94.08408	SB	ETVAA	0.0	98.	%	5/19/94	
BWTU-4-4-CS	94.08408	SE	ETVAA	0.0	92.	%	5/19/94	
BWTU-4-4-CS	94.08408	TL	ETVAA	0.0	100.	%	5/19/94	
BWTU-4-4-CS	94.08408	V	ICPES	0.0	100.6	%	5/19/94	
BWTU-4-4-CS	94.08408	ZN	ICPES	0.0	103.	%	5/19/94	

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REPORT NUMBER: 26374 (continued)

********** EM-9 QUALITY ASSURANCE REPORT *********

Prepared by: EAJ-AMENDED on 26-Jul-1994

REQUEST NUMBER: 17420 MATRIX: W ANALYST: 221 PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QC SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT
00.31081	AG	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	AL	< 100.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	AS	< 4.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	BA	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	BE	< 5.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	CA	< 200.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	CD	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	CO	< 20.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	CR	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	CU	< 20.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	FE	< 40.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	HG	< 0.2		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	K	< 1000.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	MG	< 500.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	MN	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	NA	< 500.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	NI	< 40.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	PB	< 5.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	SB	< 20.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	SE	< 4.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	TL	< 5.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	V	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL
00.31081	ZN	< 10.		UG/L	0.0		5/19/94	UNDER CONTROL

SUMMARY OF CONTROL STATUS OF BLIND QC SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT
94.08407	CN	0.42	0.042	MG/L	0.5	0.06	5/19/94	UNDER CONTROL

94.08410 AG	0.528	0.0528	MG/L	0.55	0.02	5/19/94	UNDER CONTROL
94.08410 AG	0.51	0.051	MG/L	0.55	0.02	5/19/94	UNDER CONTROL
94.08410 AL	6.94	0.694	MG/L	7.49	0.32	5/19/94	UNDER CONTROL
94.08410 AL	6.6	0.66	MG/L	7.49	0.32	5/19/94	UNDER CONTROL
94.08410 AS	< 0.004		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 AS	< 0.004		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 BA	3.83	0.383	MG/L	3.99	0.17	5/19/94	UNDER CONTROL
94.08410 BA	3.7	0.37	MG/L	3.99	0.17	5/19/94	UNDER CONTROL
94.08410 BE	1.32	0.132	MG/L	1.39	0.06	5/19/94	UNDER CONTROL
94.08410 BE	1.3	0.13	MG/L	1.39	0.06	5/19/94	UNDER CONTROL
94.08410 CA	5.6	0.56	MG/L	6.01	0.26	5/19/94	UNDER CONTROL
94.08410 CA	5.88	0.588	MG/L	6.01	0.26	5/19/94	UNDER CONTROL
94.08410 CD	3.1	0.31	MG/L	3.24	0.14	5/19/94	UNDER CONTROL
94.08410 CD	3.24	0.324	MG/L	3.24	0.14	5/19/94	UNDER CONTROL
94.08410 CO	4.3	0.43	MG/L	4.52	0.19	5/19/94	UNDER CONTROL
94.08410 CO	4.49	0.449	MG/L	4.52	0.19	5/19/94	UNDER CONTROL
94.08410 CR	4.1	0.41	MG/L	4.25	0.18	5/19/94	UNDER CONTROL
94.08410 CR	4.26	0.426	MG/L	4.25	0.18	5/19/94	UNDER CONTROL
94.08410 CU	< 0.02		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 CU	< 0.02		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 FE	4.62	0.462	MG/L	4.72	0.2	5/19/94	UNDER CONTROL
94.08410 FE	4.4	0.44	MG/L	4.72	0.2	5/19/94	UNDER CONTROL
94.08410 HG	< 0.0002		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 HG	< 0.0002		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 K	4.	0.4	MG/L	4.49	0.19	5/19/94	UNDER CONTROL
94.08410 K	4.22	0.422	MG/L	4.49	0.19	5/19/94	UNDER CONTROL
94.08410 MG	5.7	0.57	MG/L	6.28	0.27	5/19/94	UNDER CONTROL
94.08410 MG	5.94	0.594	MG/L	6.28	0.27	5/19/94	UNDER CONTROL
94.08410 MN	2.74	0.274	MG/L	2.75	0.12	5/19/94	UNDER CONTROL
94.08410 MN	2.6	0.26	MG/L	2.75	0.12	5/19/94	UNDER CONTROL
94.08410 NA	3.49	0.349	MG/L	3.74	0.16	5/19/94	UNDER CONTROL
94.08410 NA	3.3	0.33	MG/L	3.74	0.16	5/19/94	UNDER CONTROL
94.08410 NI	< 0.04		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 NI	< 0.04		MG/L	0.0		5/19/94	UNDER CONTROL
94.08410 PB	5.7	0.57	MG/L	6.26	0.27	5/19/94	UNDER CONTROL
94.08410 PB	6.2	0.62	MG/L	6.26	0.27	5/19/94	UNDER CONTROL
94.08410 SB	0.049	0.0049	MG/L	1.99	0.09	5/19/94	OUT OF CONTROL
94.08410 SB	1.8	0.18	MG/L	1.99	0.09	5/19/94	UNDER CONTROL
94.08410 SE	3.6	0.36	MG/L	3.5	0.15	5/19/94	UNDER CONTROL
94.08410 SE	0.045	0.0045	MG/L	3.5	0.15	5/19/94	OUT OF CONTROL
94.08410 TL	< 0.005		MG/L	7.5	0.32	5/19/94	OUT OF CONTROL
94.08410 TL	< 0.005		MG/L	7.5	0.32	5/19/94	OUT OF CONTROL
94.08410 V	2.3	0.23	MG/L	2.5	0.11	5/19/94	UNDER CONTROL
94.08410 V	2.42	0.242	MG/L	2.5	0.11	5/19/94	UNDER CONTROL
94.08410 ZN	0.47	0.047	MG/L	0.5	0.02	5/19/94	UNDER CONTROL
94.08410 ZN	0.515	0.0515	MG/L	0.5	0.02	5/19/94	UNDER CONTROL

REPORT NUMBER: 26374

Analyst	Reviewer	Section Leader	QA Officer
			mag
Date	Date	Date	7/26/94 Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20.

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********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LAK on 29-Jun-1994

REQUEST NUMBER: 17419 MATRIX: W ANALYST: 221 PROGRAM CODE: XG8B NOTEBOOK: 0 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08391 Date Collected: 5/11/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-3-CS	94.08391	67641	29.	8.7	UG/L	6/29/94		Acetone
BWTU-4-3-CS	94.08391	71432	< 5.		UG/L	6/29/94		Benzene
BWTU-4-3-CS	94.08391	108861	< 5.		UG/L	6/29/94		Bromobenzene
BWTU-4-3-CS	94.08391	74975	< 5.		UG/L	6/29/94		Bromochloromethane
BWTU-4-3-CS	94.08391	75274	< 5.		UG/L	6/29/94		Bromodichloromethane
BWTU-4-3-CS	94.08391	75252	< 5.		UG/L	6/29/94		Bromoform
BWTU-4-3-CS	94.08391	74839	< 10.		UG/L	6/29/94		Bromomethane
BWTU-4-3-CS	94.08391	78933	< 20.		UG/L	6/29/94		2-Butanone
BWTU-4-3-CS	94.08391	104518	< 5.		UG/L	6/29/94		n-Butylbenzene
BWTU-4-3-CS	94.08391	135988	< 5.		UG/L	6/29/94		sec-Butylbenzene
BWTU-4-3-CS	94.08391	98066	< 5.		UG/L	6/29/94		tert-Butylbenzene
BWTU-4-3-CS	94.08391	75150	< 5.		UG/L	6/29/94		Carbon disulfide
BWTU-4-3-CS	94.08391	56235	< 5.		UG/L	6/29/94		Carbon tetrachloride
BWTU-4-3-CS	94.08391	108907	< 5.		UG/L	6/29/94		Chlorobenzene
BWTU-4-3-CS	94.08391	124481	< 5.		UG/L	6/29/94		Chlorodibromomethane
BWTU-4-3-CS	94.08391	75003	< 10.		UG/L	6/29/94		Chloroethane
BWTU-4-3-CS	94.08391	67663	< 5.		UG/L	6/29/94		Chloroform
BWTU-4-3-CS	94.08391	74873	< 10.		UG/L	6/29/94		Chloromethane
BWTU-4-3-CS	94.08391	95498	< 5.		UG/L	6/29/94		o-Chlorotoluene
BWTU-4-3-CS	94.08391	106434	< 5.		UG/L	6/29/94		p-Chlorotoluene
BWTU-4-3-CS	94.08391	96128	< 10.		UG/L	6/29/94		1,2-Dibromo-3-chloropropane
BWTU-4-3-CS	94.08391	74953	< 5.		UG/L	6/29/94		Dibromomethane
BWTU-4-3-CS	94.08391	95501	< 5.		UG/L	6/29/94		o-Dichlorobenzene (1,2)
BWTU-4-3-CS	94.08391	541731	< 5.		UG/L	6/29/94		m-Dichlorobenzene (1,3)
BWTU-4-3-CS	94.08391	106467	< 5.		UG/L	6/29/94		p-Dichlorobenzene (1,4)
BWTU-4-3-CS	94.08391	75718	< 10.		UG/L	6/29/94		Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-3-CS	94.08391	75343	< 5.		UG/L	6/29/94		1,1-Dichloroethane
BWTU-4-3-CS	94.08391	107062	< 5.		UG/L	6/29/94		1,2-Dichloroethane
BWTU-4-3-CS	94.08391	75354	< 5.		UG/L	6/29/94		1,1-Dichloroethene
BWTU-4-3-CS	94.08391	156605	< 5.		UG/L	6/29/94		trans-1,2-Dichloroethene
BWTU-4-3-CS	94.08391	156592	< 5.		UG/L	6/29/94		cis-1,2-Dichloroethylene
BWTU-4-3-CS	94.08391	78875	< 5.		UG/L	6/29/94		1,2-Dichloropropane
BWTU-4-3-CS	94.08391	142289	< 5.		UG/L	6/29/94		1,3-Dichloropropane
BWTU-4-3-CS	94.08391	594207	< 5.		UG/L	6/29/94		2,2-Dichloropropane
BWTU-4-3-CS	94.08391	563586	< 5.		UG/L	6/29/94		1,1-Dichloropropene
BWTU-4-3-CS	94.08391	10061015	< 5.		UG/L	6/29/94		cis-1,3-Dichloropropene
BWTU-4-3-CS	94.08391	10061026	< 5.		UG/L	6/29/94		trans-1,3-Dichloropropene
BWTU-4-3-CS	94.08391	100414	< 5.		UG/L	6/29/94		Ethylbenzene
BWTU-4-3-CS	94.08391	106934	< 5.		UG/L	6/29/94		Ethylene dibromide
BWTU-4-3-CS	94.08391	591786	< 20.		UG/L	6/29/94		2-Hexanone
BWTU-4-3-CS	94.08391	98828	< 5.		UG/L	6/29/94		Isopropylbenzene
BWTU-4-3-CS	94.08391	99876	< 5.		UG/L	6/29/94		4-Isopropyltoluene
BWTU-4-3-CS	94.08391	74884	< 5.		UG/L	6/29/94		Methyl iodide
BWTU-4-3-CS	94.08391	108101	< 20.		UG/L	6/29/94		4-Methyl-2-pentanone
BWTU-4-3-CS	94.08391	75092	< 5.		UG/L	6/29/94		Methylene chloride
BWTU-4-3-CS	94.08391	103651	< 5.		UG/L	6/29/94		Propylbenzene
BWTU-4-3-CS	94.08391	100425	< 5.		UG/L	6/29/94		Styrene
BWTU-4-3-CS	94.08391	630206	< 5.		UG/L	6/29/94		1,1,1,2-Tetrachloroethane
BWTU-4-3-CS	94.08391	79345	< 5.		UG/L	6/29/94		1,1,2,2-Tetrachloroethane
BWTU-4-3-CS	94.08391	127184	< 5.		UG/L	6/29/94		Tetrachloroethylene
BWTU-4-3-CS	94.08391	108883	< 5.		UG/L	6/29/94		Toluene
BWTU-4-3-CS	94.08391	76131	< 5.		UG/L	6/29/94		1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-4-3-CS	94.08391	71556	< 5.		UG/L	6/29/94		1,1,1-Trichloroethane
BWTU-4-3-CS	94.08391	79005	< 5.		UG/L	6/29/94		1,1,2-Trichloroethane
BWTU-4-3-CS	94.08391	79016	< 5.		UG/L	6/29/94		Trichloroethene
BWTU-4-3-CS	94.08391	75694	< 10.		UG/L	6/29/94		Trichlorofluoromethane
BWTU-4-3-CS	94.08391	96184	< 5.		UG/L	6/29/94		1,2,3-Trichloropropane
BWTU-4-3-CS	94.08391	95636	< 5.		UG/L	6/29/94		1,2,4-Trimethylbenzene
BWTU-4-3-CS	94.08391	108678	< 5.		UG/L	6/29/94		1,3,5-Trimethylbenzene
BWTU-4-3-CS	94.08391	75014	< 10.		UG/L	6/29/94		Vinyl chloride
BWTU-4-3-CS	94.08391	1330207	< 5.		UG/L	6/29/94		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.08391

none

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LAK on 29-Jun-1994

REQUEST NUMBER: 17419 MATRIX: W ANALYST: 221 PROGRAM CODE: XG8B NOTEBOOK: 0 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08392 Date Collected: 5/11/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-3-DS	94.08392	67641	36.	10.8	UG/L	6/29/94		Acetone
BWTU-4-3-DS	94.08392	71432	< 5.		UG/L	6/29/94		Benzene
BWTU-4-3-DS	94.08392	108861	< 5.		UG/L	6/29/94		Bromobenzene
BWTU-4-3-DS	94.08392	74975	< 5.		UG/L	6/29/94		Bromochloromethane
BWTU-4-3-DS	94.08392	75274	< 5.		UG/L	6/29/94		Bromodichloromethane
BWTU-4-3-DS	94.08392	75252	< 5.		UG/L	6/29/94		Bromoform
BWTU-4-3-DS	94.08392	74839	< 10.		UG/L	6/29/94		Bromomethane
BWTU-4-3-DS	94.08392	78933	< 20.		UG/L	6/29/94		2-Butanone
BWTU-4-3-DS	94.08392	104518	< 5.		UG/L	6/29/94		n-Butylbenzene
BWTU-4-3-DS	94.08392	135988	< 5.		UG/L	6/29/94		sec-Butylbenzene
BWTU-4-3-DS	94.08392	98066	< 5.		UG/L	6/29/94		tert-Butylbenzene
BWTU-4-3-DS	94.08392	75150	< 5.		UG/L	6/29/94		Carbon disulfide
BWTU-4-3-DS	94.08392	56235	< 5.		UG/L	6/29/94		Carbon tetrachloride
BWTU-4-3-DS	94.08392	108907	< 5.		UG/L	6/29/94		Chlorobenzene
BWTU-4-3-DS	94.08392	124481	< 5.		UG/L	6/29/94		Chlorodibromomethane
BWTU-4-3-DS	94.08392	75003	< 10.		UG/L	6/29/94		Chloroethane
BWTU-4-3-DS	94.08392	67663	< 5.		UG/L	6/29/94		Chloroform
BWTU-4-3-DS	94.08392	74873	< 10.		UG/L	6/29/94		Chloromethane
BWTU-4-3-DS	94.08392	95498	< 5.		UG/L	6/29/94		o-Chlorotoluene
BWTU-4-3-DS	94.08392	106434	< 5.		UG/L	6/29/94		p-Chlorotoluene
BWTU-4-3-DS	94.08392	96128	< 10.		UG/L	6/29/94		1,2-Dibromo-3-chloropropane
BWTU-4-3-DS	94.08392	74953	< 5.		UG/L	6/29/94		Dibromomethane
BWTU-4-3-DS	94.08392	95501	< 5.		UG/L	6/29/94		o-Dichlorobenzene (1,2)
BWTU-4-3-DS	94.08392	541731	< 5.		UG/L	6/29/94		m-Dichlorobenzene (1,3)
BWTU-4-3-DS	94.08392	106467	< 5.		UG/L	6/29/94		p-Dichlorobenzene (1,4)
BWTU-4-3-DS	94.08392	75718	< 10.		UG/L	6/29/94		Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-3-DS	94.08392	75343	< 5.		UG/L	6/29/94		1,1-Dichloroethane
BWTU-4-3-DS	94.08392	107062	< 5.		UG/L	6/29/94		1,2-Dichloroethane
BWTU-4-3-DS	94.08392	75354	< 5.		UG/L	6/29/94		1,1-Dichloroethene
BWTU-4-3-DS	94.08392	156605	< 5.		UG/L	6/29/94		trans-1,2-Dichloroethene
BWTU-4-3-DS	94.08392	156592	< 5.		UG/L	6/29/94		cis-1,2-Dichloroethylene
BWTU-4-3-DS	94.08392	78875	< 5.		UG/L	6/29/94		1,2-Dichloropropane
BWTU-4-3-DS	94.08392	142289	< 5.		UG/L	6/29/94		1,3-Dichloropropane
BWTU-4-3-DS	94.08392	594207	< 5.		UG/L	6/29/94		2,2-Dichloropropane
BWTU-4-3-DS	94.08392	563586	< 5.		UG/L	6/29/94		1,1-Dichloropropene
BWTU-4-3-DS	94.08392	10061015	< 5.		UG/L	6/29/94		cis-1,3-Dichloropropene
BWTU-4-3-DS	94.08392	10061026	< 5.		UG/L	6/29/94		trans-1,3-Dichloropropene
BWTU-4-3-DS	94.08392	100414	< 5.		UG/L	6/29/94		Ethylbenzene
BWTU-4-3-DS	94.08392	106934	< 5.		UG/L	6/29/94		Ethylene dibromide
BWTU-4-3-DS	94.08392	591786	< 20.		UG/L	6/29/94		2-Hexanone
BWTU-4-3-DS	94.08392	98828	< 5.		UG/L	6/29/94		Isopropylbenzene
BWTU-4-3-DS	94.08392	99876	< 5.		UG/L	6/29/94		4-Isopropyltoluene
BWTU-4-3-DS	94.08392	74884	< 5.		UG/L	6/29/94		Methyl iodide
BWTU-4-3-DS	94.08392	108101	< 20.		UG/L	6/29/94		4-Methyl-2-pentanone
BWTU-4-3-DS	94.08392	75092	< 5.		UG/L	6/29/94		Methylene chloride
BWTU-4-3-DS	94.08392	103651	< 5.		UG/L	6/29/94		Propylbenzene
BWTU-4-3-DS	94.08392	100425	< 5.		UG/L	6/29/94		Styrene
BWTU-4-3-DS	94.08392	630206	< 5.		UG/L	6/29/94		1,1,1,2-Tetrachloroethane
BWTU-4-3-DS	94.08392	79345	< 5.		UG/L	6/29/94		1,1,2,2-Tetrachloroethane
BWTU-4-3-DS	94.08392	127184	< 5.		UG/L	6/29/94		Tetrachloroethylene
BWTU-4-3-DS	94.08392	108883	< 5.		UG/L	6/29/94		Toluene
BWTU-4-3-DS	94.08392	76131	< 5.		UG/L	6/29/94		1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-4-3-DS	94.08392	71556	< 5.		UG/L	6/29/94		1,1,1-Trichloroethane
BWTU-4-3-DS	94.08392	79005	< 5.		UG/L	6/29/94		1,1,2-Trichloroethane
BWTU-4-3-DS	94.08392	79016	< 5.		UG/L	6/29/94		Trichloroethene
BWTU-4-3-DS	94.08392	75694	< 10.		UG/L	6/29/94		Trichlorofluoromethane
BWTU-4-3-DS	94.08392	96184	< 5.		UG/L	6/29/94		1,2,3-Trichloropropane
BWTU-4-3-DS	94.08392	95636	< 5.		UG/L	6/29/94		1,2,4-Trimethylbenzene
BWTU-4-3-DS	94.08392	108678	< 5.		UG/L	6/29/94		1,3,5-Trimethylbenzene
BWTU-4-3-DS	94.08392	75014	< 10.		UG/L	6/29/94		Vinyl chloride
BWTU-4-3-DS	94.08392	1330207	< 5.		UG/L	6/29/94		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.08392

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: LAK on 29-Jun-1994

REQUEST NUMBER: 17419 MATRIX: W ANALYST: 221 PROGRAM CODE: XG8B NOTEBOOK: 0 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.08400 Date Collected: 5/12/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/16/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.08400	67641	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	Acetone
00.30878	94.08400	71432	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Benzene
00.30878	94.08400	108861	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromobenzene
00.30878	94.08400	74975	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromochloromethane
00.30878	94.08400	75274	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromodichloromethane
00.30878	94.08400	75252	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromoform
00.30878	94.08400	74839	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromomethane
00.30878	94.08400	78933	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Butanone
00.30878	94.08400	104518	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	n-Butylbenzene
00.30878	94.08400	135988	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	sec-Butylbenzene
00.30878	94.08400	98066	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	tert-Butylbenzene
00.30878	94.08400	75150	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon disulfide
00.30878	94.08400	56235	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon tetrachloride
00.30878	94.08400	108907	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorobenzene
00.30878	94.08400	124481	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorodibromomethane
00.30878	94.08400	75003	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroethane
00.30878	94.08400	67663	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroform
00.30878	94.08400	74873	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloromethane
00.30878	94.08400	95498	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Chlorotoluene
00.30878	94.08400	106434	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Chlorotoluene
00.30878	94.08400	96128	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.08400	74953	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Dibromomethane
00.30878	94.08400	95501	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30878	94.08400	541731	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30878	94.08400	106467	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30878	94.08400	75718	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Dichlorodifluoromethane
00.30878	94.08400	75343	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethane
00.30878	94.08400	107062	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dichloroethane
00.30878	94.08400	75354	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethene
00.30878	94.08400	156605	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.30878	94.08400	156592	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30878	94.08400	78875	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dichloropropane
00.30878	94.08400	142289	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3-Dichloropropane
00.30878	94.08400	594207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	2,2-Dichloropropane
00.30878	94.08400	563586	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloropropene
00.30878	94.08400	10061015	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.30878	94.08400	10061026	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.30878	94.08400	100414	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Ethylbenzene
00.30878	94.08400	106934	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Ethylene dibromide
00.30878	94.08400	591786	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Hexanone
00.30878	94.08400	98828	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Isopropylbenzene
00.30878	94.08400	99876	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Isopropyltoluene
00.30878	94.08400	74884	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Methyl iodide
00.30878	94.08400	108101	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Methyl-2-pentanone
00.30878	94.08400	75092	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Methylene chloride
00.30878	94.08400	103651	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Propylbenzene
00.30878	94.08400	100425	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Styrene
00.30878	94.08400	630206	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30878	94.08400	79345	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30878	94.08400	127184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Tetrachloroethylene
00.30878	94.08400	108883	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Toluene
00.30878	94.08400	76131	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.30878	94.08400	71556	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,1-Trichloroethane
00.30878	94.08400	79005	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloroethane
00.30878	94.08400	79016	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichloroethene
00.30878	94.08400	75694	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichlorofluoromethane
00.30878	94.08400	96184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,3-Trichloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.08400	95636	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30878	94.08400	108678	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30878	94.08400	75014	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Vinyl chloride
00.30878	94.08400	1330207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 94.08395 Date Collected: 5/12/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/16/94

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
94.08395	67641	21.	6.3	UG/L	0.0		6/29/94	OUT OF CONTROL	Acetone
94.08395	71432	57.	17.1	UG/L	56.	3.	6/29/94	UNDER CONTROL	Benzene
94.08395	108861	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromobenzene
94.08395	74975	47.	14.1	UG/L	59.	3.1	6/29/94	UNDER CONTROL	Bromochloromethane
94.08395	75274	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromodichloromethane
94.08395	75252	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromoform
94.08395	74839	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Bromomethane
94.08395	78933	23.	6.9	UG/L	0.0		6/29/94	OUT OF CONTROL	2-Butanone
94.08395	104518	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	n-Butylbenzene
94.08395	135988	35.	10.5	UG/L	67.	3.5	6/29/94	WARNING 2-3 SIG	sec-Butylbenzene
94.08395	98066	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	tert-Butylbenzene
94.08395	75150	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon disulfide
94.08395	56235	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Carbon tetrachloride
94.08395	108907	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorobenzene
94.08395	124481	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chlorodibromomethane
94.08395	75003	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroethane
94.08395	67663	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloroform
94.08395	74873	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Chloromethane
94.08395	95498	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Chlorotoluene
94.08395	106434	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Chlorotoluene
94.08395	96128	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
94.08395	74953	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Dibromomethane
94.08395	95501	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
94.08395	541731	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
94.08395	106467	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
94.08395	75718	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Dichlorodifluoromethane

94.08395	75343	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethane
94.08395	107062	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2-Dichloroethane
94.08395	75354	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloroethene
94.08395	156605	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,2-Dichloroethene
94.08395	156592	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,2-Dichloroethylene
94.08395	78875	57.	17.1	UG/L	58.	3.1	6/29/94	UNDER CONTROL	1,2-Dichloropropane
94.08395	142289	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3-Dichloropropane
94.08395	594207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	2,2-Dichloropropane
94.08395	563586	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1-Dichloropropene
94.08395	10061015	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	cis-1,3-Dichloropropene
94.08395	10061026	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	trans-1,3-Dichloropropene
94.08395	100414	60.	18.	UG/L	62.	3.3	6/29/94	UNDER CONTROL	Ethylbenzene
94.08395	106934	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Ethylene dibromide
94.08395	591786	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	2-Hexanone
94.08395	98828	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Isopropylbenzene
94.08395	99876	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Isopropyltoluene
94.08395	74884	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Methyl iodide
94.08395	108101	< 20.		UG/L	0.0		6/29/94	UNDER CONTROL	4-Methyl-2-pentanone
94.08395	75092	54.	16.2	UG/L	61.	3.2	6/29/94	UNDER CONTROL	Methylene chloride
94.08395	103651	49.	14.7	UG/L	60.	3.2	6/29/94	UNDER CONTROL	Propylbenzene
94.08395	100425	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Styrene
94.08395	630206	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
94.08395	79345	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
94.08395	127184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Tetrachloroethylene
94.08395	108883	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Toluene
94.08395	76131	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroethane
94.08395	71556	38.	11.4	UG/L	64.	3.4	6/29/94	WARNING 2-3 SIG	1,1,1-Trichloroethane
94.08395	79005	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,1,2-Trichloroethane
94.08395	79016	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichloroethene
94.08395	75694	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Trichlorofluoromethane
94.08395	96184	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,3-Trichloropropane
94.08395	95636	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,2,4-Trimethylbenzene
94.08395	108678	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	1,3,5-Trimethylbenzene
94.08395	75014	< 10.		UG/L	0.0		6/29/94	UNDER CONTROL	Vinyl chloride
94.08395	1330207	< 5.		UG/L	0.0		6/29/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	COMPLETION DATE	SAMPLE TYPE
94.08391	%		109.	105.		88.	29-Jun-1994	
94.08392	%		98.	91.		88.	29-Jun-1994	
94.08395	%		106.	98.		84.	29-Jun-1994	
94.08400	%		99.	90.		91.	29-Jun-1994	B
EPA Limits:								
Water	%	76 - 114	88 - 110	86 - 115	86 - 115	86 - 118		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121			

REPORT NUMBER: 25748

Analyst	Reviewer	Section Leader	QA Officer
			mag
Date	6/30/94 Date	Date	6/30/94 Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

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********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 27-Jun-1994

REQUEST NUMBER: 17419 MATRIX: W ANALYST: 321 PROGRAM CODE: XG8B NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08393 Date Collected: 5/11/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/17/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-2-CS	94.08393	83329	< 10.		UG/L	6/27/94		Acenaphthene
BWTU-4-2-CS	94.08393	208968	< 10.		UG/L	6/27/94		Acenaphthylene
BWTU-4-2-CS	94.08393	62533	< 10.		UG/L	6/27/94		Aniline
BWTU-4-2-CS	94.08393	120127	< 10.		UG/L	6/27/94		Anthracene
BWTU-4-2-CS	94.08393	103333	< 10.		UG/L	6/27/94		Azobenzene
BWTU-4-2-CS	94.08393	56553	< 10.		UG/L	6/27/94		Benzo[a]anthracene
BWTU-4-2-CS	94.08393	50328	< 10.		UG/L	6/27/94		Benzo[a]pyrene
BWTU-4-2-CS	94.08393	205992	< 10.		UG/L	6/27/94		Benzo[b]fluoranthene
BWTU-4-2-CS	94.08393	191242	< 10.		UG/L	6/27/94		Benzo[g,h,i]perylene
BWTU-4-2-CS	94.08393	207089	< 10.		UG/L	6/27/94		Benzo[k]fluoranthene
BWTU-4-2-CS	94.08393	65850	< 50.		UG/L	6/27/94		Benzoic acid
BWTU-4-2-CS	94.08393	100516	< 20.		UG/L	6/27/94		Benzyl alcohol
BWTU-4-2-CS	94.08393	111911	< 10.		UG/L	6/27/94		Bis(2-chloroethoxy)methane
BWTU-4-2-CS	94.08393	111444	< 10.		UG/L	6/27/94		Bis(2-chloroethyl)ether
BWTU-4-2-CS	94.08393	108601	< 10.		UG/L	6/27/94		Bis(2-chloroisopropyl)ether
BWTU-4-2-CS	94.08393	117817	< 10.		UG/L	6/27/94		Bis(2-ethylhexyl)phthalate
BWTU-4-2-CS	94.08393	101553	< 10.		UG/L	6/27/94		4-Bromophenylphenyl ether
BWTU-4-2-CS	94.08393	85687	< 10.		UG/L	6/27/94		Butyl benzyl phthalate
BWTU-4-2-CS	94.08393	59507	< 20.		UG/L	6/27/94		4-Chloro-3-methylphenol
BWTU-4-2-CS	94.08393	106478	< 20.		UG/L	6/27/94		4-Chloroaniline
BWTU-4-2-CS	94.08393	91587	< 10.		UG/L	6/27/94		2-Chloronaphthalene
BWTU-4-2-CS	94.08393	95578	< 10.		UG/L	6/27/94		o-Chlorophenol
BWTU-4-2-CS	94.08393	7005723	< 10.		UG/L	6/27/94		4-Chlorophenylphenyl ether
BWTU-4-2-CS	94.08393	218019	< 10.		UG/L	6/27/94		Chrysene
BWTU-4-2-CS	94.08393	84742	< 10.		UG/L	6/27/94		Di-n-butyl phthalate
BWTU-4-2-CS	94.08393	117840	< 10.		UG/L	6/27/94		Di-n-octyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-2-CS	94.08393	53703	< 10.		UG/L	6/27/94		Dibenzo[a,h]anthracene
BWTU-4-2-CS	94.08393	132649	< 10.		UG/L	6/27/94		Dibenzofuran
BWTU-4-2-CS	94.08393	95501	< 10.		UG/L	6/27/94		o-Dichlorobenzene (1,2)
BWTU-4-2-CS	94.08393	541731	< 10.		UG/L	6/27/94		m-Dichlorobenzene (1,3)
BWTU-4-2-CS	94.08393	106467	< 10.		UG/L	6/27/94		p-Dichlorobenzene (1,4)
BWTU-4-2-CS	94.08393	91941	< 20.		UG/L	6/27/94		3,3'-Dichlorobenzidine
BWTU-4-2-CS	94.08393	120832	< 10.		UG/L	6/27/94		2,4-Dichlorophenol
BWTU-4-2-CS	94.08393	84662	< 10.		UG/L	6/27/94		Diethyl phthalate
BWTU-4-2-CS	94.08393	131113	< 10.		UG/L	6/27/94		Dimethyl phthalate
BWTU-4-2-CS	94.08393	105679	< 10.		UG/L	6/27/94		2,4-Dimethylphenol
BWTU-4-2-CS	94.08393	51285	< 50.		UG/L	6/27/94		2,4-Dinitrophenol
BWTU-4-2-CS	94.08393	121142	< 10.		UG/L	6/27/94		2,4-Dinitrotoluene
BWTU-4-2-CS	94.08393	606202	< 10.		UG/L	6/27/94		2,6-Dinitrotoluene
BWTU-4-2-CS	94.08393	206440	< 10.		UG/L	6/27/94		Fluoranthene
BWTU-4-2-CS	94.08393	86737	< 10.		UG/L	6/27/94		Fluorene
BWTU-4-2-CS	94.08393	118741	< 10.		UG/L	6/27/94		Hexachlorobenzene
BWTU-4-2-CS	94.08393	87683	< 10.		UG/L	6/27/94		Hexachlorobutadiene
BWTU-4-2-CS	94.08393	77474	< 10.		UG/L	6/27/94		Hexachlorocyclopentadiene
BWTU-4-2-CS	94.08393	67721	< 10.		UG/L	6/27/94		Hexachloroethane
BWTU-4-2-CS	94.08393	193395	< 10.		UG/L	6/27/94		Indeno[1,2,3-cd]pyrene
BWTU-4-2-CS	94.08393	78591	< 10.		UG/L	6/27/94		Isophorone
BWTU-4-2-CS	94.08393	534521	< 50.		UG/L	6/27/94		2-Methyl-4,6-dinitrophenol
BWTU-4-2-CS	94.08393	91576	< 10.		UG/L	6/27/94		2-Methylnaphthalene
BWTU-4-2-CS	94.08393	95487	< 10.		UG/L	6/27/94		2-Methylphenol
BWTU-4-2-CS	94.08393	106445	< 10.		UG/L	6/27/94		4-Methylphenol
BWTU-4-2-CS	94.08393	91203	< 10.		UG/L	6/27/94		Naphthalene
BWTU-4-2-CS	94.08393	88744	< 50.		UG/L	6/27/94		2-Nitroaniline
BWTU-4-2-CS	94.08393	99092	< 50.		UG/L	6/27/94		3-Nitroaniline
BWTU-4-2-CS	94.08393	100016	< 20.		UG/L	6/27/94		4-Nitroaniline
BWTU-4-2-CS	94.08393	98953	< 10.		UG/L	6/27/94		Nitrobenzene
BWTU-4-2-CS	94.08393	88755	< 10.		UG/L	6/27/94		2-Nitrophenol
BWTU-4-2-CS	94.08393	100027	< 50.		UG/L	6/27/94		4-Nitrophenol
BWTU-4-2-CS	94.08393	621647	< 10.		UG/L	6/27/94		N-Nitrosodi-n-propylamine
BWTU-4-2-CS	94.08393	62759	< 10.		UG/L	6/27/94		N-Nitrosodimethylamine
BWTU-4-2-CS	94.08393	86306	< 10.		UG/L	6/27/94		N-Nitrosodiphenylamine
BWTU-4-2-CS	94.08393	87865	< 50.		UG/L	6/27/94		Pentachlorophenol

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-2-CS	94.08393	85018	< 10.		UG/L	6/27/94		Phenanthrene
BWTU-4-2-CS	94.08393	108952	< 10.		UG/L	6/27/94		Phenol
BWTU-4-2-CS	94.08393	129000	< 10.		UG/L	6/27/94		Pyrene
BWTU-4-2-CS	94.08393	120821	< 10.		UG/L	6/27/94		1,2,4-Trichlorobenzene
BWTU-4-2-CS	94.08393	95954	< 50.		UG/L	6/27/94		2,4,5-Trichlorophenol
BWTU-4-2-CS	94.08393	88062	< 10.		UG/L	6/27/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.08393

none

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 27-Jun-1994

REQUEST NUMBER: 17419 MATRIX: W ANALYST: 321 PROGRAM CODE: XG8B NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.08394 Date Collected: 5/11/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/17/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-2-DS	94.08394	83329	< 10.		UG/L	6/27/94		Acenaphthene
BWTU-4-2-DS	94.08394	208968	< 10.		UG/L	6/27/94		Acenaphthylene
BWTU-4-2-DS	94.08394	62533	< 10.		UG/L	6/27/94		Aniline
BWTU-4-2-DS	94.08394	120127	< 10.		UG/L	6/27/94		Anthracene
BWTU-4-2-DS	94.08394	103333	< 10.		UG/L	6/27/94		Azobenzene
BWTU-4-2-DS	94.08394	56553	< 10.		UG/L	6/27/94		Benzo[a]anthracene
BWTU-4-2-DS	94.08394	50328	< 10.		UG/L	6/27/94		Benzo[a]pyrene
BWTU-4-2-DS	94.08394	205992	< 10.		UG/L	6/27/94		Benzo[b]fluoranthene
BWTU-4-2-DS	94.08394	191242	< 10.		UG/L	6/27/94		Benzo[g,h,i]perylene
BWTU-4-2-DS	94.08394	207089	< 10.		UG/L	6/27/94		Benzo[k]fluoranthene
BWTU-4-2-DS	94.08394	65850	< 50.		UG/L	6/27/94		Benzoic acid
BWTU-4-2-DS	94.08394	100516	< 20.		UG/L	6/27/94		Benzyl alcohol
BWTU-4-2-DS	94.08394	111911	< 10.		UG/L	6/27/94		Bis(2-chloroethoxy)methane
BWTU-4-2-DS	94.08394	111444	< 10.		UG/L	6/27/94		Bis(2-chloroethyl)ether
BWTU-4-2-DS	94.08394	108601	< 10.		UG/L	6/27/94		Bis(2-chloroisopropyl)ether
BWTU-4-2-DS	94.08394	117817	< 10.		UG/L	6/27/94		Bis(2-ethylhexyl)phthalate
BWTU-4-2-DS	94.08394	101553	< 10.		UG/L	6/27/94		4-Bromophenylphenyl ether
BWTU-4-2-DS	94.08394	85687	< 10.		UG/L	6/27/94		Butyl benzyl phthalate
BWTU-4-2-DS	94.08394	59507	< 20.		UG/L	6/27/94		4-Chloro-3-methylphenol
BWTU-4-2-DS	94.08394	106478	< 20.		UG/L	6/27/94		4-Chloroaniline
BWTU-4-2-DS	94.08394	91587	< 10.		UG/L	6/27/94		2-Chloronaphthalene
BWTU-4-2-DS	94.08394	95578	< 10.		UG/L	6/27/94		o-Chlorophenol
BWTU-4-2-DS	94.08394	7005723	< 10.		UG/L	6/27/94		4-Chlorophenylphenyl ether
BWTU-4-2-DS	94.08394	218019	< 10.		UG/L	6/27/94		Chrysene
BWTU-4-2-DS	94.08394	84742	< 10.		UG/L	6/27/94		Di-n-butyl phthalate
BWTU-4-2-DS	94.08394	117840	< 10.		UG/L	6/27/94		Di-n-octyl phthalate

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-2-DS	94.08394	53703	< 10.		UG/L	6/27/94		Dibenzo[a,h]anthracene
BWTU-4-2-DS	94.08394	132649	< 10.		UG/L	6/27/94		Dibenzofuran
BWTU-4-2-DS	94.08394	95501	< 10.		UG/L	6/27/94		o-Dichlorobenzene (1,2)
BWTU-4-2-DS	94.08394	541731	< 10.		UG/L	6/27/94		m-Dichlorobenzene (1,3)
BWTU-4-2-DS	94.08394	106467	< 10.		UG/L	6/27/94		p-Dichlorobenzene (1,4)
BWTU-4-2-DS	94.08394	91941	< 20.		UG/L	6/27/94		3,3'-Dichlorobenzidine
BWTU-4-2-DS	94.08394	120832	< 10.		UG/L	6/27/94		2,4-Dichlorophenol
BWTU-4-2-DS	94.08394	84662	< 10.		UG/L	6/27/94		Diethyl phthalate
BWTU-4-2-DS	94.08394	131113	< 10.		UG/L	6/27/94		Dimethyl phthalate
BWTU-4-2-DS	94.08394	105679	< 10.		UG/L	6/27/94		2,4-Dimethylphenol
BWTU-4-2-DS	94.08394	51285	< 50.		UG/L	6/27/94		2,4-Dinitrophenol
BWTU-4-2-DS	94.08394	121142	< 10.		UG/L	6/27/94		2,4-Dinitrotoluene
BWTU-4-2-DS	94.08394	606202	< 10.		UG/L	6/27/94		2,6-Dinitrotoluene
BWTU-4-2-DS	94.08394	206440	< 10.		UG/L	6/27/94		Fluoranthene
BWTU-4-2-DS	94.08394	86737	< 10.		UG/L	6/27/94		Fluorene
BWTU-4-2-DS	94.08394	118741	< 10.		UG/L	6/27/94		Hexachlorobenzene
BWTU-4-2-DS	94.08394	87683	< 10.		UG/L	6/27/94		Hexachlorobutadiene
BWTU-4-2-DS	94.08394	77474	< 10.		UG/L	6/27/94		Hexachlorocyclopentadiene
BWTU-4-2-DS	94.08394	67721	< 10.		UG/L	6/27/94		Hexachloroethane
BWTU-4-2-DS	94.08394	193395	< 10.		UG/L	6/27/94		Indeno[1,2,3-cd]pyrene
BWTU-4-2-DS	94.08394	78591	< 10.		UG/L	6/27/94		Isophorone
BWTU-4-2-DS	94.08394	534521	< 50.		UG/L	6/27/94		2-Methyl-4,6-dinitrophenol
BWTU-4-2-DS	94.08394	91576	< 10.		UG/L	6/27/94		2-Methylnaphthalene
BWTU-4-2-DS	94.08394	95487	< 10.		UG/L	6/27/94		2-Methylphenol
BWTU-4-2-DS	94.08394	106445	< 10.		UG/L	6/27/94		4-Methylphenol
BWTU-4-2-DS	94.08394	91203	< 10.		UG/L	6/27/94		Naphthalene
BWTU-4-2-DS	94.08394	88744	< 50.		UG/L	6/27/94		2-Nitroaniline
BWTU-4-2-DS	94.08394	99092	< 50.		UG/L	6/27/94		3-Nitroaniline
BWTU-4-2-DS	94.08394	100016	< 20.		UG/L	6/27/94		4-Nitroaniline
BWTU-4-2-DS	94.08394	98953	< 10.		UG/L	6/27/94		Nitrobenzene
BWTU-4-2-DS	94.08394	88755	< 10.		UG/L	6/27/94		2-Nitrophenol
BWTU-4-2-DS	94.08394	100027	< 50.		UG/L	6/27/94		4-Nitrophenol
BWTU-4-2-DS	94.08394	621647	< 10.		UG/L	6/27/94		N-Nitrosodi-n-propylamine
BWTU-4-2-DS	94.08394	62759	< 10.		UG/L	6/27/94		N-Nitrosodimethylamine
BWTU-4-2-DS	94.08394	86306	< 10.		UG/L	6/27/94		N-Nitrosodiphenylamine
BWTU-4-2-DS	94.08394	87865	< 50.		UG/L	6/27/94		Pentachlorophenol

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-4-2-DS	94.08394	85018	< 10.		UG/L	6/27/94		Phenanthrene
BWTU-4-2-DS	94.08394	108952	< 10.		UG/L	6/27/94		Phenol
BWTU-4-2-DS	94.08394	129000	< 10.		UG/L	6/27/94		Pyrene
BWTU-4-2-DS	94.08394	120821	< 10.		UG/L	6/27/94		1,2,4-Trichlorobenzene
BWTU-4-2-DS	94.08394	95954	< 50.		UG/L	6/27/94		2,4,5-Trichlorophenol
BWTU-4-2-DS	94.08394	88062	< 10.		UG/L	6/27/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.08394

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 27-Jun-1994

REQUEST NUMBER: 17419 MATRIX: W ANALYST: 321 PROGRAM CODE: XG88 NOTEBOOK: D2552 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.08403 Date Collected: 5/12/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/17/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.08403	83329	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Acenaphthene
00.30879	94.08403	208968	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Acenaphthylene
00.30879	94.08403	62533	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Aniline
00.30879	94.08403	120127	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Anthracene
00.30879	94.08403	103333	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Azobenzene
00.30879	94.08403	56553	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[a]anthracene
00.30879	94.08403	50328	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[a]pyrene
00.30879	94.08403	205992	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[b]fluoranthene
00.30879	94.08403	191242	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[g,h,i]perylene
00.30879	94.08403	207089	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[k]fluoranthene
00.30879	94.08403	65850	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzoic acid
00.30879	94.08403	100516	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzyl alcohol
00.30879	94.08403	111911	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
00.30879	94.08403	111444	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-chloroethyl)ether
00.30879	94.08403	108601	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
00.30879	94.08403	117817	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
00.30879	94.08403	101553	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Bromophenylphenyl ether
00.30879	94.08403	85687	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Butyl benzyl phthalate
00.30879	94.08403	59507	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Chloro-3-methylphenol
00.30879	94.08403	106478	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Chloroaniline
00.30879	94.08403	91587	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Chloronaphthalene

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.08403	95578	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	o-Chlorophenol
00.30879	94.08403	7005723	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Chlorophenylphenyl ether
00.30879	94.08403	218019	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Chrysene
00.30879	94.08403	84742	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Di-n-butyl phthalate
00.30879	94.08403	117840	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Di-n-octyl phthalate
00.30879	94.08403	53703	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Dibenzo[a,h]anthracene
00.30879	94.08403	132649	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Dibenzofuran
00.30879	94.08403	95501	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30879	94.08403	541731	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30879	94.08403	106467	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30879	94.08403	91941	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	3,3'-Dichlorobenzidine
00.30879	94.08403	120832	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dichlorophenol
00.30879	94.08403	84662	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Diethyl phthalate
00.30879	94.08403	131113	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Dimethyl phthalate
00.30879	94.08403	105679	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dimethylphenol
00.30879	94.08403	51285	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dinitrophenol
00.30879	94.08403	121142	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dinitrotoluene
00.30879	94.08403	606202	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,6-Dinitrotoluene
00.30879	94.08403	206440	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Fluoranthene
00.30879	94.08403	86737	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Fluorene
00.30879	94.08403	118741	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachlorobenzene
00.30879	94.08403	87683	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachlorobutadiene
00.30879	94.08403	77474	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachlorocyclopentadiene
00.30879	94.08403	67721	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachloroethane
00.30879	94.08403	193395	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
00.30879	94.08403	78591	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Isophorone
00.30879	94.08403	534521	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
00.30879	94.08403	91576	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Methylnaphthalene
00.30879	94.08403	95487	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Methylphenol
00.30879	94.08403	106445	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Methylphenol
00.30879	94.08403	91203	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Naphthalene
00.30879	94.08403	88744	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Nitroaniline
00.30879	94.08403	99092	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	3-Nitroaniline
00.30879	94.08403	100016	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Nitroaniline
00.30879	94.08403	98953	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Nitrobenzene
00.30879	94.08403	88755	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Nitrophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.08403	100027	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Nitrophenol
00.30879	94.08403	621647	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
00.30879	94.08403	62759	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	N-Nitrosodimethylamine
00.30879	94.08403	86306	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	N-Nitrosodiphenylamine
00.30879	94.08403	87865	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	Pentachlorophenol
00.30879	94.08403	85018	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Phenanthrene
00.30879	94.08403	108952	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Phenol
00.30879	94.08403	129000	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Pyrene
00.30879	94.08403	120821	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	1,2,4-Trichlorobenzene
00.30879	94.08403	95954	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4,5-Trichlorophenol
00.30879	94.08403	88062	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4,6-Trichlorophenol

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

Blind QC Results, Sample # 94.08396 Date Collected: 5/12/94 Date Received: 5/12/94 Date Extracted: 5/16/94 Date Analyzed: 5/17/94

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND-NAME
94.08396	83329	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Acenaphthene
94.08396	208968	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Acenaphthylene
94.08396	62533	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Aniline
94.08396	120127	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Anthracene
94.08396	103333	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Azobenzene
94.08396	56553	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[a]anthracene
94.08396	50328	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[a]pyrene
94.08396	205992	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[b]fluoranthene
94.08396	191242	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[g,h,i]perylene
94.08396	207089	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzo[k]fluoranthene
94.08396	65850	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	Benzoic acid
94.08396	100516	20.	6.	UG/L	44.	2.3	6/27/94	OUT OF CONTROL	Benzyl alcohol
94.08396	111911	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
94.08396	111444	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-chloroethyl)ether
94.08396	108601	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Bis(2-chloroisopropyl)ether
94.08396	117817	40.	12.	UG/L	38.	2.	6/27/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
94.08396	101553	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Bromophenylphenyl ether
94.08396	85687	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Butyl benzyl phthalate
94.08396	59507	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Chloro-3-methylphenol
94.08396	106478	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Chloroaniline
94.08396	91587	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Chloronaphthalene
94.08396	95578	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	o-Chlorophenol
94.08396	7005723	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Chlorophenylphenyl ether
94.08396	218019	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Chrysene
94.08396	84742	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Di-n-butyl phthalate
94.08396	117840	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Di-n-octyl phthalate

94.08396	53703	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Dibenzo[a,h]anthracene
94.08396	132649	29.	8.7	UG/L	54.	2.8	6/27/94	WARNING 2-3 SIG	Dibenzofuran
94.08396	95501	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
94.08396	541731	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
94.08396	106467	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
94.08396	91941	< 20.		UG/L	0.0		6/27/94	UNDER CONTROL	3,3'-Dichlorobenzidine
94.08396	120832	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dichlorophenol
94.08396	84662	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Diethyl phthalate
94.08396	131113	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Dimethyl phthalate
94.08396	105679	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dimethylphenol
94.08396	51285	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dinitrophenol
94.08396	121142	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4-Dinitrotoluene
94.08396	606202	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,6-Dinitrotoluene
94.08396	206440	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Fluoranthene
94.08396	86737	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Fluorene
94.08396	118741	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachlorobenzene
94.08396	87683	16.	4.8	UG/L	42.	2.2	6/27/94	OUT OF CONTROL	Hexachlorobutadiene
94.08396	77474	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachlorocyclopentadiene
94.08396	67721	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Hexachloroethane
94.08396	193395	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
94.08396	78591	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Isophorone
94.08396	534521	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
94.08396	91576	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Methylnaphthalene
94.08396	95487	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Methylphenol
94.08396	106445	31.	9.3	UG/L	59.	3.1	6/27/94	WARNING 2-3 SIG	4-Methylphenol
94.08396	91203	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Naphthalene
94.08396	88744	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Nitroaniline
94.08396	99092	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	3-Nitroaniline
94.08396	100016	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Nitroaniline
94.08396	98953	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Nitrobenzene
94.08396	88755	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2-Nitrophenol
94.08396	100027	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	4-Nitrophenol
94.08396	621647	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
94.08396	62759	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	N-Nitrosodimethylamine
94.08396	86306	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	N-Nitrosodiphenylamine
94.08396	87865	< 50.		UG/L	0.0		6/27/94	UNDER CONTROL	Pentachlorophenol
94.08396	85018	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Phenanthrene
94.08396	108952	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Phenol
94.08396	129000	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	Pyrene
94.08396	120821	18.	5.4	UG/L	39.	2.	6/27/94	OUT OF CONTROL	1,2,4-Trichlorobenzene
94.08396	95954	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4,5-Trichlorophenol
94.08396	88062	< 10.		UG/L	0.0		6/27/94	UNDER CONTROL	2,4,6-Trichlorophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA SEMIVOLATILES

Surrogate 1 = 2-Fluorophenol (CAS # = 367124)
Surrogate 2 = Phenol-d5 (CAS # = 4165622)
Surrogate 3 = Nitrobenzene-d5 (CAS # = 4165600)
Surrogate 4 = 2-Fluorobiphenyl (CAS # = 321608)
Surrogate 5 = 2,4,6-Tribromophenol (CAS # = 118796)
Surrogate 6 = p-Terphenyl-d14 (CAS # =)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	Surrogate 6	COMPLETION DATE
94.08393	%	40.	27.	52.	61.	84.	113.	27-Jun-1994
94.08394	%	34.	23.	45.	52.	66.	112.	27-Jun-1994
94.08396	%	38.	27.	63.	75.	75.	116.	27-Jun-1994
94.08403	%	41.	25.	60.	66.	85.	113.	27-Jun-1994
EPA Limits:								
Water	%	21 - 100	10 - 94	35 - 114	43 - 116	10 - 123	33 - 141	
Soil	%	25 - 121	24 - 113	23 - 120	30 - 115	19 - 122	18 - 137	

REPORT NUMBER: 25672

Analyst	Reviewer	Section Leader	QA Officer
			mag
Date	6/28/94 Date	Date	6/28/94 Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in
'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

ATTACHMENT 4

ANALYTICAL RESULTS FOR SAMPLES FROM STEP 5—FINAL INTERNAL RINSE

REPORT NUMBER: 24948

********** EM-9 ANALYTICAL REPORT **********

Prepared by: PEC on 26-May-1994

REQUEST NUMBER: 17522 MATRIX: W ANALYST: AAS PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

CUSTOMER SAMPLES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
BWTU-5-4-CS	94.09441	HG	CVAA	< 0.2		UG/L	5/26/94	
BWTU-5-4-DS	94.09448	HG	CVAA	12.	1.	UG/L	5/26/94	

CUSTOMER SAMPLE DUPLICATES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
BWTU-5-4-CS	94.09441	HG	CVAA	< 0.2		UG/L	5/26/94	
BWTU-5-4-DS	94.09448	HG	CVAA	12.	1.	UG/L	5/26/94	

MATRIX SPIKES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	AMOUNT SPIKED	AMOUNT RECOVERED	UNITS	COMPLETION DATE	COMMENT
BWTU-5-4-CS	94.09441	HG	CVAA	2.	1.9	UG/L	5/26/94	

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REPORT NUMBER: 24948 (continued)

********** EM-9 QUALITY ASSURANCE REPORT *********

Prepared by: PEC on 26-May-1994

REQUEST NUMBER: 17522 MATRIX: W ANALYST: AAS PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QC SAMPLES RUN WITH THIS BATCH

SAMPLE NUM	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT
00.30716	HG	4.1	0.4	UG/L	4.	0.4	5/26/94	UNDER CONTROL

SUMMARY OF CONTROL STATUS OF BLIND QC SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

___ Only qualitative data requested

✓ Only Open (non-blind) QC samples run with this sample batch.

___ No QC samples run with this sample batch.

___ No QC samples for this constituent and matrix type available within EM-9

REPORT NUMBER: 24948	PEC	Michele B. Dow	GAM	mag
	Analyst	Reviewer	Section Leader	QA Officer
	5/26/94	5-26-94	5/27/94	5/31/94
	Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1991,' LA-12436-MS, Vol. I, pp. 21-22.

ATTACHMENT 5

ANALYTICAL RESULTS FOR SAMPLES FROM STEP 6—VESSEL AND PIPING RINSES

REPORT NUMBER: 26328

********** EM-9 ANALYTICAL REPORT **********

Prepared by: MJT on 25-Jul-1994

REQUEST NUMBER: 17883 MATRIX: W ANALYST: 221 PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

CUSTOMER SAMPLES:

CUSTOMER NUM	SAMPLE NUM	ANALYSIS	ANALYTICAL TECHNIQUE	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
BWTU-6-DSP	94.12870	HG	CVAA	0.9	0.09	UG/L	7/14/94	
BWTU-6-DSR	94.12871	HG	CVAA	0.6	0.06	UG/L	7/14/94	
BWTU-6-CSB	94.12872	HG	CVAA	0.9	0.09	UG/L	7/14/94	

****

REPORT NUMBER: 26328 (continued)

********** EM-9 QUALITY ASSURANCE REPORT *********

Prepared by: MJT on 25-Jul-1994

REQUEST NUMBER: 17883 MATRIX: W ANALYST: 221 PROGRAM CODE: M359

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301

NOTEBOOK: PAGE:

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QC SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

SUMMARY OF CONTROL STATUS OF BLIND QC SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Open (non-blind) QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

REPORT NUMBER: 26328				
	_____	Victor A. Nunez	_____	mag
	Analyst	Reviewer	Section Leader	QA Officer
	_____	7-25-94	_____	7/25/94
	Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20.

****

ATTACHMENT 6

ANALYTICAL RESULTS FOR SAMPLES FROM STEP 7—FLOOR AND HOOD WASH

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 26-Aug-1994

REQUEST NUMBER: 18185 MATRIX: W ANALYST: 321 PROGRAM CODE: M359 NOTEBOOK: 1AS2974 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.15470 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/25/94 Date Analyzed: 7/28/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-CS	94.15470	83329	< 10.		UG/L	8/26/94		Acenaphthene
BWTU-7-2-CS	94.15470	208968	< 10.		UG/L	8/26/94		Acenaphthylene
BWTU-7-2-CS	94.15470	62533	< 10.		UG/L	8/26/94		Aniline
BWTU-7-2-CS	94.15470	120127	< 10.		UG/L	8/26/94		Anthracene
BWTU-7-2-CS	94.15470	103333	< 10.		UG/L	8/26/94		Azobenzene
BWTU-7-2-CS	94.15470	56553	< 10.		UG/L	8/26/94		Benzo[a]anthracene
BWTU-7-2-CS	94.15470	50328	< 10.		UG/L	8/26/94		Benzo[a]pyrene
BWTU-7-2-CS	94.15470	205992	< 10.		UG/L	8/26/94		Benzo[b]fluoranthene
BWTU-7-2-CS	94.15470	191242	< 10.		UG/L	8/26/94		Benzo[g,h,i]perylene
BWTU-7-2-CS	94.15470	207089	< 10.		UG/L	8/26/94		Benzo[k]fluoranthene
BWTU-7-2-CS	94.15470	65850	< 50.		UG/L	8/26/94		Benzoic acid
BWTU-7-2-CS	94.15470	100516	< 20.		UG/L	8/26/94		Benzyl alcohol
BWTU-7-2-CS	94.15470	111911	< 10.		UG/L	8/26/94		Bis(2-chloroethoxy)methane
BWTU-7-2-CS	94.15470	111444	< 10.		UG/L	8/26/94		Bis(2-chloroethyl)ether
BWTU-7-2-CS	94.15470	117817	< 10.		UG/L	8/26/94		Bis(2-ethylhexyl)phthalate
BWTU-7-2-CS	94.15470	101553	< 10.		UG/L	8/26/94		4-Bromophenylphenyl ether
BWTU-7-2-CS	94.15470	85687	< 10.		UG/L	8/26/94		Butyl benzyl phthalate
BWTU-7-2-CS	94.15470	59507	< 20.		UG/L	8/26/94		4-Chloro-3-methylphenol
BWTU-7-2-CS	94.15470	106478	< 20.		UG/L	8/26/94		4-Chloroaniline
BWTU-7-2-CS	94.15470	91587	< 10.		UG/L	8/26/94		2-Chloronaphthalene
BWTU-7-2-CS	94.15470	95578	< 10.		UG/L	8/26/94		o-Chlorophenol
BWTU-7-2-CS	94.15470	7005723	< 10.		UG/L	8/26/94		4-Chlorophenylphenyl ether
BWTU-7-2-CS	94.15470	218019	< 10.		UG/L	8/26/94		Chrysene
BWTU-7-2-CS	94.15470	84742	< 10.		UG/L	8/26/94		Di-n-butyl phthalate
BWTU-7-2-CS	94.15470	117840	< 10.		UG/L	8/26/94		Di-n-octyl phthalate
BWTU-7-2-CS	94.15470	53703	< 10.		UG/L	8/26/94		Dibenzo[a,h]anthracene

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-CS	94.15470	132649	< 10.		UG/L	8/26/94		Dibenzofuran
BWTU-7-2-CS	94.15470	95501	< 10.		UG/L	8/26/94		o-Dichlorobenzene (1,2)
BWTU-7-2-CS	94.15470	541731	< 10.		UG/L	8/26/94		m-Dichlorobenzene (1,3)
BWTU-7-2-CS	94.15470	106467	< 10.		UG/L	8/26/94		p-Dichlorobenzene (1,4)
BWTU-7-2-CS	94.15470	91941	< 20.		UG/L	8/26/94		3,3'-Dichlorobenzidine
BWTU-7-2-CS	94.15470	120832	< 10.		UG/L	8/26/94		2,4-Dichlorophenol
BWTU-7-2-CS	94.15470	84662	< 10.		UG/L	8/26/94		Diethyl phthalate
BWTU-7-2-CS	94.15470	131113	< 10.		UG/L	8/26/94		Dimethyl phthalate
BWTU-7-2-CS	94.15470	105679	< 10.		UG/L	8/26/94		2,4-Dimethylphenol
BWTU-7-2-CS	94.15470	51285	< 50.		UG/L	8/26/94		2,4-Dinitrophenol
BWTU-7-2-CS	94.15470	121142	< 10.		UG/L	8/26/94		2,4-Dinitrotoluene
BWTU-7-2-CS	94.15470	606202	< 10.		UG/L	8/26/94		2,6-Dinitrotoluene
BWTU-7-2-CS	94.15470	206440	< 10.		UG/L	8/26/94		Fluoranthene
BWTU-7-2-CS	94.15470	86737	< 10.		UG/L	8/26/94		Fluorene
BWTU-7-2-CS	94.15470	118741	< 10.		UG/L	8/26/94		Hexachlorobenzene
BWTU-7-2-CS	94.15470	87683	< 10.		UG/L	8/26/94		Hexachlorobutadiene
BWTU-7-2-CS	94.15470	77474	< 10.		UG/L	8/26/94		Hexachlorocyclopentadiene
BWTU-7-2-CS	94.15470	67721	< 10.		UG/L	8/26/94		Hexachloroethane
BWTU-7-2-CS	94.15470	193395	< 10.		UG/L	8/26/94		Indeno[1,2,3-cd]pyrene
BWTU-7-2-CS	94.15470	78591	< 10.		UG/L	8/26/94		Isophorone
BWTU-7-2-CS	94.15470	534521	< 50.		UG/L	8/26/94		2-Methyl-4,6-dinitrophenol
BWTU-7-2-CS	94.15470	91576	< 10.		UG/L	8/26/94		2-Methylnaphthalene
BWTU-7-2-CS	94.15470	95487	< 10.		UG/L	8/26/94		2-Methylphenol
BWTU-7-2-CS	94.15470	106445	< 10.		UG/L	8/26/94		4-Methylphenol
BWTU-7-2-CS	94.15470	91203	< 10.		UG/L	8/26/94		Naphthalene
BWTU-7-2-CS	94.15470	88744	< 50.		UG/L	8/26/94		2-Nitroaniline
BWTU-7-2-CS	94.15470	99092	< 50.		UG/L	8/26/94		3-Nitroaniline
BWTU-7-2-CS	94.15470	100016	< 20.		UG/L	8/26/94		4-Nitroaniline
BWTU-7-2-CS	94.15470	98953	< 10.		UG/L	8/26/94		Nitrobenzene
BWTU-7-2-CS	94.15470	88755	< 10.		UG/L	8/26/94		2-Nitrophenol
BWTU-7-2-CS	94.15470	100027	< 50.		UG/L	8/26/94		4-Nitrophenol
BWTU-7-2-CS	94.15470	621647	< 10.		UG/L	8/26/94		N-Nitrosodi-n-propylamine
BWTU-7-2-CS	94.15470	62759	< 10.		UG/L	8/26/94		N-Nitrosodimethylamine
BWTU-7-2-CS	94.15470	86306	< 10.		UG/L	8/26/94		N-Nitrosodiphenylamine
BWTU-7-2-CS	94.15470	87865	< 50.		UG/L	8/26/94		Pentachlorophenol
BWTU-7-2-CS	94.15470	85018	< 10.		UG/L	8/26/94		Phenanthrene

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS		ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-CS	94.15470	108952		< 10.		UG/L	8/26/94		Phenol
BWTU-7-2-CS	94.15470	129000		< 10.		UG/L	8/26/94		Pyrene
BWTU-7-2-CS	94.15470	120821		< 10.		UG/L	8/26/94		1,2,4-Trichlorobenzene
BWTU-7-2-CS	94.15470	95954		< 50.		UG/L	8/26/94		2,4,5-Trichlorophenol
BWTU-7-2-CS	94.15470	88062		< 10.		UG/L	8/26/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.15470

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS		ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-CS	94.15470	100	TI	79.		UG/L	8/26/94		Unknown organic compound

********** EM-9 ANALYTICAL REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 26-Aug-1994

REQUEST NUMBER: 18185 MATRIX: W ANALYST: 321 PROGRAM CODE: M359 NOTEBOOK: 1AS2974 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.15472 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/25/94 Date Analyzed: 7/28/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-DS	94.15472	83329	< 10.		UG/L	8/26/94		Acenaphthene
BWTU-7-2-DS	94.15472	208968	< 10.		UG/L	8/26/94		Acenaphthylene
BWTU-7-2-DS	94.15472	62533	< 10.		UG/L	8/26/94		Aniline
BWTU-7-2-DS	94.15472	120127	< 10.		UG/L	8/26/94		Anthracene
BWTU-7-2-DS	94.15472	103333	< 10.		UG/L	8/26/94		Azobenzene
BWTU-7-2-DS	94.15472	56553	< 10.		UG/L	8/26/94		Benzo[a]anthracene
BWTU-7-2-DS	94.15472	50328	< 10.		UG/L	8/26/94		Benzo[a]pyrene
BWTU-7-2-DS	94.15472	205992	< 10.		UG/L	8/26/94		Benzo[b]fluoranthene
BWTU-7-2-DS	94.15472	191242	< 10.		UG/L	8/26/94		Benzo[g,h,i]perylene
BWTU-7-2-DS	94.15472	207089	< 10.		UG/L	8/26/94		Benzo[k]fluoranthene
BWTU-7-2-DS	94.15472	65850	< 50.		UG/L	8/26/94		Benzoic acid
BWTU-7-2-DS	94.15472	100516	< 20.		UG/L	8/26/94		Benzyl alcohol
BWTU-7-2-DS	94.15472	111911	< 10.		UG/L	8/26/94		Bis(2-chloroethoxy)methane
BWTU-7-2-DS	94.15472	111444	< 10.		UG/L	8/26/94		Bis(2-chloroethyl)ether
BWTU-7-2-DS	94.15472	117817	< 10.		UG/L	8/26/94		Bis(2-ethylhexyl)phthalate
BWTU-7-2-DS	94.15472	101553	< 10.		UG/L	8/26/94		4-Bromophenylphenyl ether
BWTU-7-2-DS	94.15472	85687	< 10.		UG/L	8/26/94		Butyl benzyl phthalate
BWTU-7-2-DS	94.15472	59507	< 20.		UG/L	8/26/94		4-Chloro-3-methylphenol
BWTU-7-2-DS	94.15472	106478	< 20.		UG/L	8/26/94		4-Chloroaniline
BWTU-7-2-DS	94.15472	91587	< 10.		UG/L	8/26/94		2-Chloronaphthalene
BWTU-7-2-DS	94.15472	95578	< 10.		UG/L	8/26/94		o-Chlorophenol
BWTU-7-2-DS	94.15472	7005723	< 10.		UG/L	8/26/94		4-Chlorophenylphenyl ether
BWTU-7-2-DS	94.15472	218019	< 10.		UG/L	8/26/94		Chrysene
BWTU-7-2-DS	94.15472	84742	< 10.		UG/L	8/26/94		Di-n-butyl phthalate
BWTU-7-2-DS	94.15472	117840	< 10.		UG/L	8/26/94		Di-n-octyl phthalate
BWTU-7-2-DS	94.15472	53703	< 10.		UG/L	8/26/94		Dibenzo[a,h]anthracene

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-DS	94.15472	132649	< 10.		UG/L	8/26/94		Dibenzofuran
BWTU-7-2-DS	94.15472	95501	< 10.		UG/L	8/26/94		o-Dichlorobenzene (1,2)
BWTU-7-2-DS	94.15472	541731	< 10.		UG/L	8/26/94		m-Dichlorobenzene (1,3)
BWTU-7-2-DS	94.15472	106467	< 10.		UG/L	8/26/94		p-Dichlorobenzene (1,4)
BWTU-7-2-DS	94.15472	91941	< 20.		UG/L	8/26/94		3,3'-Dichlorobenzidine
BWTU-7-2-DS	94.15472	120832	< 10.		UG/L	8/26/94		2,4-Dichlorophenol
BWTU-7-2-DS	94.15472	84662	< 10.		UG/L	8/26/94		Diethyl phthalate
BWTU-7-2-DS	94.15472	131113	< 10.		UG/L	8/26/94		Dimethyl phthalate
BWTU-7-2-DS	94.15472	105679	< 10.		UG/L	8/26/94		2,4-Dimethylphenol
BWTU-7-2-DS	94.15472	51285	< 50.		UG/L	8/26/94		2,4-Dinitrophenol
BWTU-7-2-DS	94.15472	121142	< 10.		UG/L	8/26/94		2,4-Dinitrotoluene
BWTU-7-2-DS	94.15472	606202	< 10.		UG/L	8/26/94		2,6-Dinitrotoluene
BWTU-7-2-DS	94.15472	206440	< 10.		UG/L	8/26/94		Fluoranthene
BWTU-7-2-DS	94.15472	86737	< 10.		UG/L	8/26/94		Fluorene
BWTU-7-2-DS	94.15472	118741	< 10.		UG/L	8/26/94		Hexachlorobenzene
BWTU-7-2-DS	94.15472	87683	< 10.		UG/L	8/26/94		Hexachlorobutadiene
BWTU-7-2-DS	94.15472	77474	< 10.		UG/L	8/26/94		Hexachlorocyclopentadiene
BWTU-7-2-DS	94.15472	67721	< 10.		UG/L	8/26/94		Hexachloroethane
BWTU-7-2-DS	94.15472	193395	< 10.		UG/L	8/26/94		Indeno[1,2,3-cd]pyrene
BWTU-7-2-DS	94.15472	78591	< 10.		UG/L	8/26/94		Isophorone
BWTU-7-2-DS	94.15472	534521	< 50.		UG/L	8/26/94		2-Methyl-4,6-dinitrophenol
BWTU-7-2-DS	94.15472	91576	< 10.		UG/L	8/26/94		2-Methylnaphthalene
BWTU-7-2-DS	94.15472	95487	< 10.		UG/L	8/26/94		2-Methylphenol
BWTU-7-2-DS	94.15472	106445	< 10.		UG/L	8/26/94		4-Methylphenol
BWTU-7-2-DS	94.15472	91203	< 10.		UG/L	8/26/94		Naphthalene
BWTU-7-2-DS	94.15472	88744	< 50.		UG/L	8/26/94		2-Nitroaniline
BWTU-7-2-DS	94.15472	99092	< 50.		UG/L	8/26/94		3-Nitroaniline
BWTU-7-2-DS	94.15472	100016	< 20.		UG/L	8/26/94		4-Nitroaniline
BWTU-7-2-DS	94.15472	98953	< 10.		UG/L	8/26/94		Nitrobenzene
BWTU-7-2-DS	94.15472	88755	< 10.		UG/L	8/26/94		2-Nitrophenol
BWTU-7-2-DS	94.15472	100027	< 50.		UG/L	8/26/94		4-Nitrophenol
BWTU-7-2-DS	94.15472	621647	< 10.		UG/L	8/26/94		N-Nitrosodi-n-propylamine
BWTU-7-2-DS	94.15472	62759	< 10.		UG/L	8/26/94		N-Nitrosodimethylamine
BWTU-7-2-DS	94.15472	86306	< 10.		UG/L	8/26/94		N-Nitrosodiphenylamine
BWTU-7-2-DS	94.15472	87865	< 50.		UG/L	8/26/94		Pentachlorophenol
BWTU-7-2-DS	94.15472	85018	< 10.		UG/L	8/26/94		Phenanthrene

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS		ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-DS	94.15472	108952		< 10.		UG/L	8/26/94		Phenol
BWTU-7-2-DS	94.15472	129000		< 10.		UG/L	8/26/94		Pyrene
BWTU-7-2-DS	94.15472	120821		< 10.		UG/L	8/26/94		1,2,4-Trichlorobenzene
BWTU-7-2-DS	94.15472	95954		< 50.		UG/L	8/26/94		2,4,5-Trichlorophenol
BWTU-7-2-DS	94.15472	88062		< 10.		UG/L	8/26/94		2,4,6-Trichlorophenol

Tentatively Identified Compounds in Customer Sample # 94.15472

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS		ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-2-DS	94.15472	142621	TI	15.		UG/L	8/26/94		Hexanoic acid
BWTU-7-2-DS	94.15472	100	TI	15.		UG/L	8/26/94		Unknown organic compound
BWTU-7-2-DS	94.15472	100	TI	20.		UG/L	8/26/94		Unknown organic compound
BWTU-7-2-DS	94.15472	100	TI	140.		UG/L	8/26/94		Unknown organic compound

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA SEMIVOLATILES Prepared by: LAK on 26-Aug-1994

REQUEST NUMBER: 18185 MATRIX: W ANALYST: 321 PROGRAM CODE: M359 NOTEBOOK: 1AS2974 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.15458 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/25/94 Date Analyzed: 7/28/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.15458	83329	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Acenaphthene
00.30879	94.15458	208968	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Acenaphthylene
00.30879	94.15458	62533	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Aniline
00.30879	94.15458	120127	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Anthracene
00.30879	94.15458	103333	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Azobenzene
00.30879	94.15458	56553	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzo[a]anthracene
00.30879	94.15458	50328	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzo[a]pyrene
00.30879	94.15458	205992	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzo[b]fluoranthene
00.30879	94.15458	191242	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzo[g,h,i]perylene
00.30879	94.15458	207089	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzo[k]fluoranthene
00.30879	94.15458	65850	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzoic acid
00.30879	94.15458	100516	< 20.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzyl alcohol
00.30879	94.15458	111911	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Bis(2-chloroethoxy)methane
00.30879	94.15458	111444	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Bis(2-chloroethyl)ether
00.30879	94.15458	117817	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Bis(2-ethylhexyl)phthalate
00.30879	94.15458	101553	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Bromophenylphenyl ether
00.30879	94.15458	85687	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Butyl benzyl phthalate
00.30879	94.15458	59507	< 20.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Chloro-3-methylphenol
00.30879	94.15458	106478	< 20.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Chloroaniline
00.30879	94.15458	91587	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Chloronaphthalene
00.30879	94.15458	95578	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	o-Chlorophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.15458	7005723	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Chlorophenylphenyl ether
00.30879	94.15458	218019	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Chrysene
00.30879	94.15458	84742	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Di-n-butyl phthalate
00.30879	94.15458	117840	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Di-n-octyl phthalate
00.30879	94.15458	53703	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Dibenzo[a,h]anthracene
00.30879	94.15458	132649	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Dibenzofuran
00.30879	94.15458	95501	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30879	94.15458	541731	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30879	94.15458	106467	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30879	94.15458	91941	< 20.		UG/L	0.0		8/26/94	UNDER CONTROL	3,3'-Dichlorobenzidine
00.30879	94.15458	120832	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2,4-Dichlorophenol
00.30879	94.15458	84662	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Diethyl phthalate
00.30879	94.15458	131113	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Dimethyl phthalate
00.30879	94.15458	105679	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2,4-Dimethylphenol
00.30879	94.15458	51285	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	2,4-Dinitrophenol
00.30879	94.15458	121142	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2,4-Dinitrotoluene
00.30879	94.15458	606202	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2,6-Dinitrotoluene
00.30879	94.15458	206440	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Fluoranthene
00.30879	94.15458	86737	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Fluorene
00.30879	94.15458	118741	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Hexachlorobenzene
00.30879	94.15458	87683	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Hexachlorobutadiene
00.30879	94.15458	77474	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Hexachlorocyclopentadiene
00.30879	94.15458	67721	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Hexachloroethane
00.30879	94.15458	193395	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Indeno[1,2,3-cd]pyrene
00.30879	94.15458	78591	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Isophorone
00.30879	94.15458	534521	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Methyl-4,6-dinitrophenol
00.30879	94.15458	91576	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Methylnaphthalene
00.30879	94.15458	95487	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Methylphenol
00.30879	94.15458	106445	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Methylphenol
00.30879	94.15458	91203	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Naphthalene
00.30879	94.15458	88744	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Nitroaniline
00.30879	94.15458	99092	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	3-Nitroaniline
00.30879	94.15458	100016	< 20.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Nitroaniline
00.30879	94.15458	98953	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Nitrobenzene
00.30879	94.15458	88755	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Nitrophenol
00.30879	94.15458	100027	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Nitrophenol

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30879	94.15458	621647	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	N-Nitrosodi-n-propylamine
00.30879	94.15458	62759	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	N-Nitrosodimethylamine
00.30879	94.15458	86306	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	N-Nitrosodiphenylamine
00.30879	94.15458	87865	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	Pentachlorophenol
00.30879	94.15458	85018	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Phenanthrene
00.30879	94.15458	108952	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Phenol
00.30879	94.15458	129000	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Pyrene
00.30879	94.15458	120821	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2,4-Trichlorobenzene
00.30879	94.15458	95954	< 50.		UG/L	0.0		8/26/94	UNDER CONTROL	2,4,5-Trichlorophenol
00.30879	94.15458	88062	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	2,4,6-Trichlorophenol

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

___ Only qualitative data requested

___ Only Open (non-blind) QC samples run with this sample batch.

✓ No QC samples run with this sample batch.

___ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA SEMIVOLATILES

Surrogate 1 = 2-Fluorophenol (CAS # = 367124)
Surrogate 2 = Phenol-d5 (CAS # = 4165622)
Surrogate 3 = Nitrobenzene-d5 (CAS # = 4165600)
Surrogate 4 = 2-Fluorobiphenyl (CAS # = 321608)
Surrogate 5 = 2,4,6-Tribromophenol (CAS # = 118796)
Surrogate 6 = p-Terphenyl-d14 (CAS # =)
Surrogate 7 = 4-Chloroanaline (CAS # = 106478)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	Surrogate 6	Surrogate 7	COMPLETION DATE
94.15458	%	63.	60.	45.	51.	81.	61.		26-Aug-1994
94.15470	%	88.	78.	73.	91.	106.	117.		26-Aug-1994
94.15472	%	73.	68.	84.	98.	94.	109.		26-Aug-1994
EPA Limits:									
Water	%	21 - 100	10 - 94	35 - 114	43 - 116	10 - 123	33 - 141	34 - 120	
Soil	%	25 - 121	24 - 113	23 - 120	30 - 115	19 - 122	18 - 137		

REPORT NUMBER: 27260

Analyst	Reviewer	Section Leader	QA Officer
	8/26/94		8/26/94
Date	Date	Date	Date

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in 'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20

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********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LAK on 26-Aug-1994

REQUEST NUMBER: 18185 MATRIX: W ANALYST: 221 PROGRAM CODE: M359 NOTEBOOK: ILA0210 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.15460 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/29/94 Date Analyzed: 7/29/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-3-CS	94.15460	67641	< 20.		UG/L	8/26/94		Acetone
BWTU-7-3-CS	94.15460	71432	< 5.		UG/L	8/26/94		Benzene
BWTU-7-3-CS	94.15460	108861	< 5.		UG/L	8/26/94		Bromobenzene
BWTU-7-3-CS	94.15460	74975	< 5.		UG/L	8/26/94		Bromochloromethane
BWTU-7-3-CS	94.15460	75274	< 5.		UG/L	8/26/94		Bromodichloromethane
BWTU-7-3-CS	94.15460	75252	< 5.		UG/L	8/26/94		Bromoform
BWTU-7-3-CS	94.15460	74839	< 10.		UG/L	8/26/94		Bromomethane
BWTU-7-3-CS	94.15460	78933	< 20.		UG/L	8/26/94		2-Butanone
BWTU-7-3-CS	94.15460	104518	< 5.		UG/L	8/26/94		n-Butylbenzene
BWTU-7-3-CS	94.15460	135988	< 5.		UG/L	8/26/94		sec-Butylbenzene
BWTU-7-3-CS	94.15460	98066	< 5.		UG/L	8/26/94		tert-Butylbenzene
BWTU-7-3-CS	94.15460	75150	< 5.		UG/L	8/26/94		Carbon disulfide
BWTU-7-3-CS	94.15460	56235	< 5.		UG/L	8/26/94		Carbon tetrachloride
BWTU-7-3-CS	94.15460	108907	< 5.		UG/L	8/26/94		Chlorobenzene
BWTU-7-3-CS	94.15460	124481	< 5.		UG/L	8/26/94		Chlorodibromomethane
BWTU-7-3-CS	94.15460	75003	< 10.		UG/L	8/26/94		Chloroethane
BWTU-7-3-CS	94.15460	67663	< 5.		UG/L	8/26/94		Chloroform
BWTU-7-3-CS	94.15460	74873	< 10.		UG/L	8/26/94		Chloromethane
BWTU-7-3-CS	94.15460	95498	< 5.		UG/L	8/26/94		o-Chlorotoluene
BWTU-7-3-CS	94.15460	106434	< 5.		UG/L	8/26/94		p-Chlorotoluene
BWTU-7-3-CS	94.15460	96128	< 10.		UG/L	8/26/94		1,2-Dibromo-3-chloropropane
BWTU-7-3-CS	94.15460	74953	< 5.		UG/L	8/26/94		Dibromomethane
BWTU-7-3-CS	94.15460	95501	< 5.		UG/L	8/26/94		o-Dichlorobenzene (1,2)
BWTU-7-3-CS	94.15460	541731	< 5.		UG/L	8/26/94		m-Dichlorobenzene (1,3)
BWTU-7-3-CS	94.15460	106467	< 5.		UG/L	8/26/94		p-Dichlorobenzene (1,4)
BWTU-7-3-CS	94.15460	75718	< 10.		UG/L	8/26/94		Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-3-CS	94.15460	75343	< 5.		UG/L	8/26/94		1,1-Dichloroethane
BWTU-7-3-CS	94.15460	107062	< 5.		UG/L	8/26/94		1,2-Dichloroethane
BWTU-7-3-CS	94.15460	75354	< 5.		UG/L	8/26/94		1,1-Dichloroethene
BWTU-7-3-CS	94.15460	156605	< 5.		UG/L	8/26/94		trans-1,2-Dichloroethene
BWTU-7-3-CS	94.15460	156592	< 5.		UG/L	8/26/94		cis-1,2-Dichloroethylene
BWTU-7-3-CS	94.15460	78875	< 5.		UG/L	8/26/94		1,2-Dichloropropane
BWTU-7-3-CS	94.15460	142289	< 5.		UG/L	8/26/94		1,3-Dichloropropane
BWTU-7-3-CS	94.15460	594207	< 5.		UG/L	8/26/94		2,2-Dichloropropane
BWTU-7-3-CS	94.15460	563586	< 5.		UG/L	8/26/94		1,1-Dichloropropene
BWTU-7-3-CS	94.15460	10061015	< 5.		UG/L	8/26/94		cis-1,3-Dichloropropene
BWTU-7-3-CS	94.15460	10061026	< 5.		UG/L	8/26/94		trans-1,3-Dichloropropene
BWTU-7-3-CS	94.15460	100414	< 5.		UG/L	8/26/94		Ethylbenzene
BWTU-7-3-CS	94.15460	106934	< 5.		UG/L	8/26/94		Ethylene dibromide
BWTU-7-3-CS	94.15460	591786	< 20.		UG/L	8/26/94		2-Hexanone
BWTU-7-3-CS	94.15460	98828	< 5.		UG/L	8/26/94		Isopropylbenzene
BWTU-7-3-CS	94.15460	99876	< 5.		UG/L	8/26/94		4-Isopropyltoluene
BWTU-7-3-CS	94.15460	74884	< 5.		UG/L	8/26/94		Methyl iodide
BWTU-7-3-CS	94.15460	108101	< 20.		UG/L	8/26/94		4-Methyl-2-pentanone
BWTU-7-3-CS	94.15460	75092	< 5.		UG/L	8/26/94		Methylene chloride
BWTU-7-3-CS	94.15460	103651	< 5.		UG/L	8/26/94		Propylbenzene
BWTU-7-3-CS	94.15460	100425	< 5.		UG/L	8/26/94		Styrene
BWTU-7-3-CS	94.15460	630206	< 5.		UG/L	8/26/94		1,1,1,2-Tetrachloroethane
BWTU-7-3-CS	94.15460	79345	< 5.		UG/L	8/26/94		1,1,2,2-Tetrachloroethane
BWTU-7-3-CS	94.15460	127184	< 5.		UG/L	8/26/94		Tetrachloroethylene
BWTU-7-3-CS	94.15460	108883	< 5.		UG/L	8/26/94		Toluene
BWTU-7-3-CS	94.15460	76131	< 5.		UG/L	8/26/94		1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-7-3-CS	94.15460	71556	< 5.		UG/L	8/26/94		1,1,1-Trichloroethane
BWTU-7-3-CS	94.15460	79005	< 5.		UG/L	8/26/94		1,1,2-Trichloroethane
BWTU-7-3-CS	94.15460	79016	< 5.		UG/L	8/26/94		Trichloroethene
BWTU-7-3-CS	94.15460	75694	< 5.		UG/L	8/26/94		Trichlorofluoromethane
BWTU-7-3-CS	94.15460	96184	< 5.		UG/L	8/26/94		1,2,3-Trichloropropane
BWTU-7-3-CS	94.15460	95636	< 5.		UG/L	8/26/94		1,2,4-Trimethylbenzene
BWTU-7-3-CS	94.15460	108678	< 5.		UG/L	8/26/94		1,3,5-Trimethylbenzene
BWTU-7-3-CS	94.15460	75014	< 10.		UG/L	8/26/94		Vinyl chloride
BWTU-7-3-CS	94.15460	1330207	< 5.		UG/L	8/26/94		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.15460

none

********** EM-9 ANALYTICAL REPORT **********

EPA VOLATILES Prepared by: LAK on 26-Aug-1994

REQUEST NUMBER: 18185 MATRIX: W ANALYST: 221 PROGRAM CODE: M359 NOTEBOOK: ILA0210 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

Customer Sample Results, Sample # 94.15462 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/28/94 Date Analyzed: 7/28/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-3-DS	94.15462	67641	< 20.		UG/L	8/26/94		Acetone
BWTU-7-3-DS	94.15462	71432	< 5.		UG/L	8/26/94		Benzene
BWTU-7-3-DS	94.15462	108861	< 5.		UG/L	8/26/94		Bromobenzene
BWTU-7-3-DS	94.15462	74975	< 5.		UG/L	8/26/94		Bromochloromethane
BWTU-7-3-DS	94.15462	75274	< 5.		UG/L	8/26/94		Bromodichloromethane
BWTU-7-3-DS	94.15462	75252	< 5.		UG/L	8/26/94		Bromoform
BWTU-7-3-DS	94.15462	74839	< 10.		UG/L	8/26/94		Bromomethane
BWTU-7-3-DS	94.15462	78933	< 20.		UG/L	8/26/94		2-Butanone
BWTU-7-3-DS	94.15462	104518	< 5.		UG/L	8/26/94		n-Butylbenzene
BWTU-7-3-DS	94.15462	135988	< 5.		UG/L	8/26/94		sec-Butylbenzene
BWTU-7-3-DS	94.15462	98066	< 5.		UG/L	8/26/94		tert-Butylbenzene
BWTU-7-3-DS	94.15462	75150	< 5.		UG/L	8/26/94		Carbon disulfide
BWTU-7-3-DS	94.15462	56235	< 5.		UG/L	8/26/94		Carbon tetrachloride
BWTU-7-3-DS	94.15462	108907	< 5.		UG/L	8/26/94		Chlorobenzene
BWTU-7-3-DS	94.15462	124481	< 5.		UG/L	8/26/94		Chlorodibromomethane
BWTU-7-3-DS	94.15462	75003	< 10.		UG/L	8/26/94		Chloroethane
BWTU-7-3-DS	94.15462	67663	< 5.		UG/L	8/26/94		Chloroform
BWTU-7-3-DS	94.15462	74873	< 10.		UG/L	8/26/94		Chloromethane
BWTU-7-3-DS	94.15462	95498	< 5.		UG/L	8/26/94		o-Chlorotoluene
BWTU-7-3-DS	94.15462	106434	< 5.		UG/L	8/26/94		p-Chlorotoluene
BWTU-7-3-DS	94.15462	96128	< 10.		UG/L	8/26/94		1,2-Dibromo-3-chloropropane
BWTU-7-3-DS	94.15462	74953	< 5.		UG/L	8/26/94		Dibromomethane
BWTU-7-3-DS	94.15462	95501	< 5.		UG/L	8/26/94		o-Dichlorobenzene (1,2)
BWTU-7-3-DS	94.15462	541731	< 5.		UG/L	8/26/94		m-Dichlorobenzene (1,3)
BWTU-7-3-DS	94.15462	106467	< 5.		UG/L	8/26/94		p-Dichlorobenzene (1,4)
BWTU-7-3-DS	94.15462	75718	< 10.		UG/L	8/26/94		Dichlorodifluoromethane

********** EM-9 ANALYTICAL REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT	COMPOUND NAME
BWTU-7-3-DS	94.15462	75343	< 5.		UG/L	8/26/94		1,1-Dichloroethane
BWTU-7-3-DS	94.15462	107062	< 5.		UG/L	8/26/94		1,2-Dichloroethane
BWTU-7-3-DS	94.15462	75354	< 5.		UG/L	8/26/94		1,1-Dichloroethene
BWTU-7-3-DS	94.15462	156605	< 5.		UG/L	8/26/94		trans-1,2-Dichloroethene
BWTU-7-3-DS	94.15462	156592	< 5.		UG/L	8/26/94		cis-1,2-Dichloroethylene
BWTU-7-3-DS	94.15462	78875	< 5.		UG/L	8/26/94		1,2-Dichloropropane
BWTU-7-3-DS	94.15462	142289	< 5.		UG/L	8/26/94		1,3-Dichloropropane
BWTU-7-3-DS	94.15462	594207	< 5.		UG/L	8/26/94		2,2-Dichloropropane
BWTU-7-3-DS	94.15462	563586	< 5.		UG/L	8/26/94		1,1-Dichloropropene
BWTU-7-3-DS	94.15462	10061015	< 5.		UG/L	8/26/94		cis-1,3-Dichloropropene
BWTU-7-3-DS	94.15462	10061026	< 5.		UG/L	8/26/94		trans-1,3-Dichloropropene
BWTU-7-3-DS	94.15462	100414	< 5.		UG/L	8/26/94		Ethylbenzene
BWTU-7-3-DS	94.15462	106934	< 5.		UG/L	8/26/94		Ethylene dibromide
BWTU-7-3-DS	94.15462	591786	< 20.		UG/L	8/26/94		2-Hexanone
BWTU-7-3-DS	94.15462	98828	< 5.		UG/L	8/26/94		Isopropylbenzene
BWTU-7-3-DS	94.15462	99876	< 5.		UG/L	8/26/94		4-Isopropyltoluene
BWTU-7-3-DS	94.15462	74884	< 5.		UG/L	8/26/94		Methyl iodide
BWTU-7-3-DS	94.15462	108101	< 20.		UG/L	8/26/94		4-Methyl-2-pentanone
BWTU-7-3-DS	94.15462	75092	< 5.		UG/L	8/26/94		Methylene chloride
BWTU-7-3-DS	94.15462	103651	< 5.		UG/L	8/26/94		Propylbenzene
BWTU-7-3-DS	94.15462	100425	< 5.		UG/L	8/26/94		Styrene
BWTU-7-3-DS	94.15462	630206	< 5.		UG/L	8/26/94		1,1,1,2-Tetrachloroethane
BWTU-7-3-DS	94.15462	79345	< 5.		UG/L	8/26/94		1,1,2,2-Tetrachloroethane
BWTU-7-3-DS	94.15462	127184	< 5.		UG/L	8/26/94		Tetrachloroethylene
BWTU-7-3-DS	94.15462	108883	< 5.		UG/L	8/26/94		Toluene
BWTU-7-3-DS	94.15462	76131	< 5.		UG/L	8/26/94		1,1,2-Trichloro-1,2,2-trifluoroethane
BWTU-7-3-DS	94.15462	71556	< 5.		UG/L	8/26/94		1,1,1-Trichloroethane
BWTU-7-3-DS	94.15462	79005	< 5.		UG/L	8/26/94		1,1,2-Trichloroethane
BWTU-7-3-DS	94.15462	79016	< 5.		UG/L	8/26/94		Trichloroethene
BWTU-7-3-DS	94.15462	75694	< 5.		UG/L	8/26/94		Trichlorofluoromethane
BWTU-7-3-DS	94.15462	96184	< 5.		UG/L	8/26/94		1,2,3-Trichloropropane
BWTU-7-3-DS	94.15462	95636	< 5.		UG/L	8/26/94		1,2,4-Trimethylbenzene
BWTU-7-3-DS	94.15462	108678	< 5.		UG/L	8/26/94		1,3,5-Trimethylbenzene
BWTU-7-3-DS	94.15462	75014	< 10.		UG/L	8/26/94		Vinyl chloride
BWTU-7-3-DS	94.15462	1330207	< 5.		UG/L	8/26/94		Mixed-Xylenes (o ± m ± p)

Tentatively Identified Compounds in Customer Sample # 94.15462

none

********** EM-9 QUALITY ASSURANCE REPORT **********

EPA VOLATILES Prepared by: LAK on 26-Aug-1994

REQUEST NUMBER: 18185 MATRIX: W ANALYST: 221 PROGRAM CODE: M359 NOTEBOOK: ILA0210 PAGE:

OWNER: Jerry E. Freer GROUP: CST-7 MAIL-STOP: E518 PHONE: 7-4301 TECHNIQUE: GCMS ANALYTICAL PROCEDURE: EPA SW-846 3RD

SUMMARY OF CONTROL STATUS OF OPEN (NON-BLIND) QA SAMPLES RUN WITH THIS BATCH

There were no open (non-blind) Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Blind QC samples run with this batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLANK QC SAMPLES RUN WITH THIS BATCH

Blank Results, Sample # 94.15456 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/29/94 Date Analyzed: 7/29/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.15456	67641	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	Acetone
00.30878	94.15456	71432	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzene
00.30878	94.15456	108861	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromobenzene
00.30878	94.15456	74975	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromochloromethane
00.30878	94.15456	75274	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromodichloromethane
00.30878	94.15456	75252	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromoform
00.30878	94.15456	74839	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromomethane
00.30878	94.15456	78933	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Butanone
00.30878	94.15456	104518	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	n-Butylbenzene
00.30878	94.15456	135988	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	sec-Butylbenzene
00.30878	94.15456	98066	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	tert-Butylbenzene
00.30878	94.15456	75150	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Carbon disulfide
00.30878	94.15456	56235	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Carbon tetrachloride
00.30878	94.15456	108907	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Chlorobenzene
00.30878	94.15456	124481	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Chlorodibromomethane
00.30878	94.15456	75003	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Chloroethane
00.30878	94.15456	67663	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Chloroform
00.30878	94.15456	74873	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Chloromethane
00.30878	94.15456	95498	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	o-Chlorotoluene
00.30878	94.15456	106434	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	p-Chlorotoluene
00.30878	94.15456	96128	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.15456	74953	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Dibromomethane
00.30878	94.15456	95501	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30878	94.15456	541731	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30878	94.15456	106467	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30878	94.15456	75718	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Dichlorodifluoromethane
00.30878	94.15456	75343	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1-Dichloroethane
00.30878	94.15456	107062	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2-Dichloroethane
00.30878	94.15456	75354	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1-Dichloroethene
00.30878	94.15456	156605	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.30878	94.15456	156592	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30878	94.15456	78875	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2-Dichloropropane
00.30878	94.15456	142289	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,3-Dichloropropane
00.30878	94.15456	594207	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	2,2-Dichloropropane
00.30878	94.15456	563586	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1-Dichloropropene
00.30878	94.15456	10061015	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.30878	94.15456	10061026	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.30878	94.15456	100414	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Ethylbenzene
00.30878	94.15456	106934	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Ethylene dibromide
00.30878	94.15456	591786	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Hexanone
00.30878	94.15456	98828	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Isopropylbenzene
00.30878	94.15456	99876	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Isopropyltoluene
00.30878	94.15456	74884	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Methyl iodide
00.30878	94.15456	108101	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Methyl-2-pentanone
00.30878	94.15456	75092	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Methylene chloride
00.30878	94.15456	103651	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Propylbenzene
00.30878	94.15456	100425	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Styrene
00.30878	94.15456	630206	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30878	94.15456	79345	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30878	94.15456	127184	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Tetrachloroethylene
00.30878	94.15456	108883	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Toluene
00.30878	94.15456	76131	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.30878	94.15456	71556	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,1-Trichloroethane
00.30878	94.15456	79005	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,2-Trichloroethane
00.30878	94.15456	79016	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Trichloroethene
00.30878	94.15456	75694	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Trichlorofluoromethane
00.30878	94.15456	96184	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2,3-Trichloropropane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.15456	95636	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30878	94.15456	108678	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30878	94.15456	75014	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Vinyl chloride
00.30878	94.15456	1330207	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Results, Sample # 94.15457 Date Collected: 7/21/94 Date Received: 7/22/94 Date Extracted: 7/28/94 Date Analyzed: 7/28/94

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.15457	67641	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	Acetone
00.30878	94.15457	71432	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Benzene
00.30878	94.15457	108861	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromobenzene
00.30878	94.15457	74975	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromochloromethane
00.30878	94.15457	75274	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromodichloromethane
00.30878	94.15457	75252	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromoform
00.30878	94.15457	74839	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Bromomethane
00.30878	94.15457	78933	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Butanone
00.30878	94.15457	104518	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	n-Butylbenzene
00.30878	94.15457	135988	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	sec-Butylbenzene
00.30878	94.15457	98066	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	tert-Butylbenzene
00.30878	94.15457	75150	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Carbon disulfide
00.30878	94.15457	56235	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Carbon tetrachloride
00.30878	94.15457	108907	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Chlorobenzene
00.30878	94.15457	124481	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Chlorodibromomethane
00.30878	94.15457	75003	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Chloroethane
00.30878	94.15457	67663	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Chloroform

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.15457	74873	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Chloromethane
00.30878	94.15457	95498	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	o-Chlorotoluene
00.30878	94.15457	106434	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	p-Chlorotoluene
00.30878	94.15457	96128	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2-Dibromo-3-chloropropane
00.30878	94.15457	74953	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Dibromomethane
00.30878	94.15457	95501	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	o-Dichlorobenzene (1,2)
00.30878	94.15457	541731	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	m-Dichlorobenzene (1,3)
00.30878	94.15457	106467	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	p-Dichlorobenzene (1,4)
00.30878	94.15457	75718	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Dichlorodifluoromethane
00.30878	94.15457	75343	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1-Dichloroethane
00.30878	94.15457	107062	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2-Dichloroethane
00.30878	94.15457	75354	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1-Dichloroethene
00.30878	94.15457	156605	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	trans-1,2-Dichloroethene
00.30878	94.15457	156592	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	cis-1,2-Dichloroethylene
00.30878	94.15457	78875	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2-Dichloropropane
00.30878	94.15457	142289	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,3-Dichloropropane
00.30878	94.15457	594207	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	2,2-Dichloropropane
00.30878	94.15457	563586	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1-Dichloropropene
00.30878	94.15457	10061015	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	cis-1,3-Dichloropropene
00.30878	94.15457	10061026	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	trans-1,3-Dichloropropene
00.30878	94.15457	100414	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Ethylbenzene
00.30878	94.15457	106934	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Ethylene dibromide
00.30878	94.15457	591786	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	2-Hexanone
00.30878	94.15457	98828	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Isopropylbenzene
00.30878	94.15457	99876	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Isopropyltoluene
00.30878	94.15457	74884	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Methyl iodide
00.30878	94.15457	108101	< 100.		UG/L	0.0		8/26/94	UNDER CONTROL	4-Methyl-2-pentanone
00.30878	94.15457	75092	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Methylene chloride
00.30878	94.15457	103651	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Propylbenzene
00.30878	94.15457	100425	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Styrene
00.30878	94.15457	630206	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,1,2-Tetrachloroethane
00.30878	94.15457	79345	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,2,2-Tetrachloroethane
00.30878	94.15457	127184	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Tetrachloroethylene
00.30878	94.15457	108883	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Toluene
00.30878	94.15457	76131	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,2-Trichloro-1,2,2-trifluoroetha
00.30878	94.15457	71556	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,1-Trichloroethane

********** EM-9 QUALITY ASSURANCE REPORT **********

CUSTOMER NUMBER	SAMPLE NUMBER	ANALYSIS	ANALYTICAL RESULT	ANALYTICAL UNCERTAINTY	UNITS	QC VALUE	QC UNCERTAINTY	COMPLETION DATE	COMMENT	COMPOUND NAME
00.30878	94.15457	79005	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,1,2-Trichloroethane
00.30878	94.15457	79016	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Trichloroethene
00.30878	94.15457	75694	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Trichlorofluoromethane
00.30878	94.15457	96184	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2,3-Trichloropropane
00.30878	94.15457	95636	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,2,4-Trimethylbenzene
00.30878	94.15457	108678	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	1,3,5-Trimethylbenzene
00.30878	94.15457	75014	< 10.		UG/L	0.0		8/26/94	UNDER CONTROL	Vinyl chloride
00.30878	94.15457	1330207	< 5.		UG/L	0.0		8/26/94	UNDER CONTROL	Mixed-Xylenes (o ± m ± p)

Blank Spike Results: none

Blank Spike Duplicate Results: none

********** EM-9 QUALITY ASSURANCE REPORT **********

SUMMARY OF CONTROL STATUS OF BLIND QA SAMPLES RUN WITH THIS BATCH

There were no blind Quality Control materials run with the samples reported above for one of the following reasons:

____ Only qualitative data requested

____ Only Open (non-blind) QC samples run with this sample batch.

____ No QC samples run with this sample batch.

____ No QC samples for this constituent and matrix type available within EM-9

********** EM-9 QUALITY ASSURANCE REPORT **********

SURROGATE RESULTS FOR EPA VOLATILES

Surrogate 1 = 1,2-Dichloroethane d4 (CAS # = 17060070)
Surrogate 2 = Toluene d8 (CAS # = 2037265)
Surrogate 3 = 4-Bromofluorobenzene (CAS # = 460004)
Surrogate 4 = 2-Chlorostyrene (CAS # = 2039874)
Surrogate 5 = Dibromofluoromethane (CAS # = 1868537)

SAMPLE NUMBER	UNITS	Surrogate 1	Surrogate 2	Surrogate 3	Surrogate 4	Surrogate 5	COMPLETION DATE	SAMPLE TYPE
94.15456	%	0.0	102.	101.		98.	26-Aug-1994	B
94.15457	%	0.0	102.	97.		97.	26-Aug-1994	B
94.15460	%	0.0	101.	95.		94.	26-Aug-1994	
94.15462	%	0.0	102.	103.		99.	26-Aug-1994	
EPA Limits:								
Water	%	76 - 114	88 - 110	86 - 115	86 - 115	86 - 118		
Soil	%	70 - 121	81 - 117	74 - 121	74 - 121			

REPORT NUMBER: 27259

Analyst	Reviewer	Section Leader	QA Officer
	Laura Kelly		mag
Date	8/26/94	Date	8/26/94

No Sample Discrepancies Noted by Sample Management Section

The control status of the preceeding data was evaluated using the standard statistical criteria set forth in
'Quality Assurance for Health and Environmental Chemistry: 1992,' LA-12790-MS, Vol. I, pp. 19-20