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PHASE 3 FIELD SAMPLING, ANALYSIS AND TESTING AT LANDFILLS 4 AND 5 NAS FORT WORTH TX

9/1/1994

INTERNATIONAL TECHNOLOGIES

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NAVAL AIR STATION
FORT WORTH JRB
CARSWELL FIELD
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

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INTERNATIONAL TECHNOLOGY CORPORATION

Project No. 305895
September 1994

Draft Summary Report

?hase III Report
-ield Sampling, Analysis and Testing
;arswell Air Force Base, Landfills 4 and 5
-ort Worth, Texas

;ontract No. DACA56-92-D-0008
)elivery Order No. 0013

repared for:

)epartment of the Army
'ulsa District, Corps of Engineers
'ulsa, Oklahoma

repared by:

Γ Corporation
lonroeville, Pennsylvania

PHASE III REPORT
FIELD SAMPLING, ANALYSIS, AND TESTING

CARSWELL AIR FORCE BASE, LANDFILLS 4 AND 5
FORT WORTH, TEXAS

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1.0 Introduction

This report has been prepared to summarize the activities associated with the Phase III field program of the groundwater remediation in the Landfills 4 and 5 Area of Carswell Air Force Base (AFB) in Fort Worth, Texas. This report was prepared for the Tulsa District, U.S. Army Corps of Engineers (USACE) under USACE Contract No. DACA56-92-D-008, Delivery Order No. 0013.

The purpose of the Phase III program was to select, locate, and install additional groundwater recovery wells in the Landfills 4 and 5 Area. Phase I Recovery Wells CAR-RW1, CAR-RW2, and CAR-RW3 were installed in April and May 1993, and Phase II Recovery Wells CAR-RW4 through CAR-RW8 were installed in June 1993. The treatment system was constructed, a discharge permit was obtained for the Fort Worth Publicly Owned Treatment Works (POTW) and the system was started on 3 December 1993. The Phase III locations were selected based on the trend of the bedrock erosional channel, the thickness of the Terrace deposit basal sand and gravel, and the location of the trichloroethylene plume (TCE) in the Landfills 4 and 5 Area as it is presently identified. The additional recovery wells will enhance the capture of the TCE plume. Phase I and Phase II recovery wells were installed in the center of the erosional channel along or near White Settlement Road. Phase III wells extend the coverage of the plume along the axis of the erosional channel with Recovery Wells CAR-RW4 and CAR-RW12 and across the plume with Recovery Wells CAR-RW10 and CAR-RW11.

Chapter 2.0 of this report describes the Phase III field program and Chapter 3.0 describes the analytical program. Boring logs, well construction diagrams, and monitoring well development records are included in Appendix A. Sample collection logs are included in Appendix B and certificates of analysis and chain-of-custody forms are included in Appendix C.

2.0 Field Investigation

The Phase III field program was conducted in July and August 1994. The program included the drilling of seven soil borings, with four borings completed as groundwater recovery wells and one boring completed as a monitoring well; the development of the recovery wells; and the collection of groundwater samples for laboratory analysis. Field work commenced on

Friday, 15 July 1994 with mobilization and site setup activities and ended on 1 August 1994 with the development and sampling of Monitoring Well IT-MW-01T. Underground utilities were cleared by the base engineer prior to drilling at each location. Carswell AFB Landfills 4 and 5 work was done concurrently with the Air Force Plant No. 4 Window Area work, minimizing the mobilization and equipment costs and shortening the schedule for both projects.

2.1 Recovery Well Installation and Development

Figure 1 shows the location of the recovery wells installed to date in the Landfills 4 and 5 Area. Soil Borings CAR-SB1, CAR-SB3, CAR-SB4, CAR-SB5, CAR-SB6, CAR-SB7, and IT-MW-01T were drilled using 7-7/8-inch outside diameter hollow-stem augers (HSA). A boring was not done at location CAR-SB4. At location CAR-SB2, the hole was drilled using the augers without any samples being collected. All HSA borings were drilled to the top of bedrock. From ground surface to total depth, continuous 24-inch long, 2-inch-diameter split-spoon soil samples were collected. These samples were used to determine the presence, thickness and character of the Terrace deposit basal sand and gravel. The top of bedrock was confirmed by auger refusal and in some cases rock cuttings in the drive shoe of the split-spoon sampler. Drilling did not continue into bedrock. The pilot borings with continuous split-spoon sampling were made before the Phase III wells were installed because earlier work indicated the need for detailed characterization of the Terrace deposits in the erosional channels. The thickness and quality of the saturated basal sands and gravel are not appropriate for recovery wells at all locations. Recovery wells were installed at locations where the basal sand and gravel were present with minimal amount of fines and where the well spacing was sufficient for plume capture.

Seven soil borings were drilled during the Phase III work. Saturated Terrace deposit basal sand and gravel was encountered in all the borings. Soil Borings CAR-SB2, CAR-SB5, CAR-SB6, and CAR-SB7 were completed as recovery wells. Soil Boring IT-MW-01T was completed as a 4-inch-diameter polyvinyl chloride (PVC) monitoring well. Soil Boring CAR-SB2 was completed as Recovery Well CAR-RW1, Soil Boring CAR-SB5 was completed as Recovery Well RW-CAR-RW10, Soil Boring CAR-SB6 was completed as Recovery Well CAR-RW9, and Soil Boring CAR-SB7 was completed as Recovery Well CAR-RW12.

After all the boreholes were advanced to the top of bedrock, a field decision was made by the IT geologist to either abandon the boring or complete it as a recovery well. At locations where a well was installed, the pilot boring was reamed out using the mud rotary drilling method with a 10-inch-diameter bit. The lack of silts and clays in the Terrace deposits in the Landfills 4 and 5 Area required the use of bentonite in the drilling fluid so the mud weight would keep the hole open.

Soil boring abandonment at locations where wells were not installed was done in accordance with Texas Natural Resources Conservation Commission regulations. The hole abandonment grout was composed of approximately 94 pounds of cement and 5 pounds of bentonite mixed with 6 to 7 gallons of potable water. Soil cuttings and drilling muds were placed in 20-cubic-yard roll-off boxes equipped with water-tight steel lids. Once characterized, the drill muds and cuttings will be disposed of in accordance with applicable regulations.

Recovery wells were installed with various lengths of 0.010-inch continuous slotted wire-wrapped 6-inch diameter stainless steel screen and stainless steel riser pipe. The bottom of the screen was set at or near the top of bedrock. The screen was set near the bedrock surface to intercept the maximum thickness of the Terrace deposit basal sand and gravel. A tremie pipe was used with potable water to wash the cuttings out of the borehole for proper screen placement where the collapse of the basal sand and gravel filled the hole. Once the screen was set, the sand pack, and bentonite seal were placed by gravity followed by a cement-bentonite grout placed through a tremie pipe. The surface completions at each well are flush mounts. Permanent recovery well access lids and flush-mounted vaults will be installed during system piping installation. Well pumps will be installed after the vaults are completed.

Recovery Well CAR-RW9 is located on the north side of White Settlement Road approximately 350 feet east of Recovery Well CAR-RW2. The bottom of the well was set at 26.33 feet with 10.0 feet of screen. Recovery Well CAR-RW10 is located approximately 240 feet north of White Settlement Road near to the flightline east boundary fence that runs into the treatment plant site. The bottom of the well was set at 35.5 feet with 10 feet of screen. Recovery Well CAR-RW11 is located approximately 93 feet north of White Settlement Road near the flightline east boundary fence. The bottom of the well is set at 35.5 feet with 10 feet of screen. Recovery Well CAR-RW12 is located on the north side of White Settlement Road approximately 40 feet west of the west boundary fence of the

treatment plant. The bottom of the well is set at 40.5 feet with 15 feet of screen. The screen intervals in the Phase III recovery wells intercept the lower portion of Terrace deposit basal sand and gravel. Based on the top of the saturated zone as determined during drilling, Recovery Well CAR-RW9 has approximately 8 feet of saturated thickness, CAR-RW10 has approximately 13.5 feet of saturated thickness, CAR-RW11 has approximately 10 feet of saturated thickness, and CAR-RW12 has approximately 14 feet of saturated thickness.

Monitoring Well IT-MW-O1T is located approximately 34 feet north of White Settlement Road near the intersection of Roaring Springs Road. The bottom of the well was set at a depth of 22.5 feet with the 10-foot screen intercepting 5 feet of basal sands and gravel at this location. Monitoring Well IT-MW-01T was installed inside the hollow-stem augers.

Table 1 presents a summary of the well construction details for all the Landfills 4 and 5 Area recovery wells installed to date by IT.

The Phase III recovery wells were developed by a combination of surging and bailing 30 to 100 gallons followed by pumping 300 to 375 gallons with a submersible pump. At location CAR-RW9, 400 gallons of water were bailed and 950 gallons of water were pumped during development. The well was drilled with a heavy bentonite mud to prevent hole collapse. Other holes did not require as much bentonite during drilling and, therefore, less development was required. After the development water became less turbid, at 200-300 gallons pumped, temperature, pH, and conductivity readings were recorded during well development. Initial discharge water from each well had high turbidity. At the end of development, the discharge water from recovery wells was clear and field parameters satisfied within 10 percent for successive measurements. Decontamination and development water was disposed of in the Landfills 4 and 5 Area treatment plant once the solids were settled out.

The rate at which the recovery wells were developed during pumping was controlled so the drawdown was minimized. Recovery wells were developed at the following rates: Recovery Well CAR-RW9 at approximately 10 gallons per minute (gpm) with 1.5 feet of drawdown, Recovery Well CAR-RW10 at 9.8 gpm with no apparent drawdown, and Recovery Well CAR-RW12 at 9.4 gpm with no apparent drawdown.

Boring logs, well construction diagrams, and monitoring well development forms are presented in Appendix A.

3.0 Analytical Program

Groundwater samples were collected at the end of well development from the Phase III recovery wells and Monitoring Well IT-MW-01T. Groundwater samples were collected to provide additional data on groundwater quality to ensure that the additional water from the wells would not impact the treatment system.

The recovery well samples were collected from the well development discharge stream using a small diameter pipe attached to a small gate valve. The samples were analyzed by Quanterra Environmental Services (formerly IT Analytical Service) laboratory in Austin, Texas. Groundwater sample collection procedures and documentation were done in accordance with the Contract Quality Control Plan (CQCP) (IT Corporation [IT], 1992).

Groundwater samples from the recovery wells collected at the end of well development were analyzed for volatile organic compounds (VOC) using EPA Method 8240, semivolatile organics using EPA Method 8270, metals (arsenic, barium, calcium, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, sodium, and zinc) using EPA 6000/7000 Series Methods; and general chemistry parameters (alkalinity, carbonate, bicarbonate, chemical oxygen demand (COD), nitrate, total settleable solids, total dissolved solids (TSD), total organic carbon (TOC), and total suspended solids) using various EPA and standard methods. The sample from IT-MW-01T was analyzed for all the above parameters except COD, nitrate, and TOC.

Table 2 provides a summary of the detected volatile organic results. Trichloroethylene, trans-1,2,dichloroethylene, and cis-1,2-dichloroethylene were detected in all the recovery well samples. Vinyl chloride was detected in samples from Recovery Wells CAR-RW11 and CAR-RW12. Trichloroethylene was the only VOC detected in the groundwater sample from Monitoring Well IT-MW-01T. Methylene chloride, which is not a contaminant in the Landfills 4 and 5 Area, was detected at low levels in the recovery well samples and is due to laboratory contaminations. No other Method 8240 VOCs were detected.

The semivolatile organic results were nondetect for all the Method 8270 compounds except bis(2-ethylhexyl) phthalate. Bis(2-ethylhexyl) phthalate was detected in samples from recovery well CAR-RW11 at 11 micrograms per liter (µg/L). This compound was also detected in the laboratory blank and is a common laboratory contaminant found in various environmental media.

Metals analyses are presented in Table 3 and general chemistry analyses are presented in Table 4. The metals and general chemistry results are generally consistent with previous data collected in the Phase I, Phase II, and the June quarterly sampling events. The exception is the COD result for the sample collected from Recovery Well CAR-RW10. The COD result is 180 mg/L, which is higher than any of the previous COD analyses. Elevated COD results at this location may be due to water coming out of Landfill 5 to the west and upgradient from CAR-RW10.

A preliminary review of the analytical data packages indicates the data is of good quality and all holding times were met.

TABLES

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Official Government

Document

Table 1
Summary of Recovery Well Construction Details
Carswell Air Force Base - Landfills 4 and 5
Fort Worth, Texas

Recovery Well	Project Phase	Total Depth Well Boring (ft)	Total Depth of Well (ft)	Screen Interval (ft)	Thickness[1] Basal Sand and Gravel
CAR-RW1*	Phase I	34.1	34.0	19 - 34	33.1
CAR-RW2	Phase I	34.8	34.5	19.5 - 34.5	34.8
CAR-RW3	Phase I	28.0	26.0	16.0 - 26.0	24.0
CAR-RW4	Phase II	33.0	32.0	17.0 - 32.0	27.0
CAR-RW5	Phase II	31.8	31.2	16.2 - 31.2	24.3
CAR-RW6	Phase II	33.0	33.0	13.0 - 33.0	27.0
CAR-RW7*	Phase II	35.0	33.7	18.7 - 33.7	25.5
CAR-RW8	Phase II	37.0	37	22.0 - 37.0	33.0
CAR-RW9	Phase III	26.33	26.33	14.75 - 24.75	20.33
CAR-RW10	Phase III	35.5	35.5	24.75 - 34.75	25.50
CAR-RW11	Phase III	35.5	35.5	24.75 - 34.75	27.5
CAR-RW12	Phase III	40.5	40.5	24.67 - 39.67	30.5
IT-MW-01T**	Phase III	22.5	22.5	10 - 22	4.8

[1] Basal sand and gravel thickness in Phase I and Phase II wells based on mud rotary cuttings. Phase III basal sand and gravel thickness determined from split-spoon samples.

* Recovery wells CAR-RW1 and CAR-RW7 are not connected to the recovery system. CAR-LF04-0, a 6-inch polyvinyl chloride (PVC) well was retrofitted with a pump and controls as part of the recovery system.

** IT-MW-01T is a 4-inch-diameter PVC monitoring well.

Table 2
Summary of Detected Volatile Organic Compounds[1] - July 1994
Phase III Well Installations
Carswell Air Force Base - Landfills 4 and 5
Fort Worth, Texas

Compound	Well Sample[2]					
	RW9-7-94	RW10-7-94	RW11-7-94	RW12-7-94	RW18-7-94[3]	IT-MW-01T
Methylene Chloride	17B	16B	17B	17B	15B	ND(10)
trans-1,2-Dichloroethylene	15	20	32	28	27	ND(5)
cis-1,2-Dichloroethylene	270	250	300	310	330	ND(5)
Trichloroethylene	930	800	980	870	950	47
Vinyl Chloride	ND(10)	ND(10)	19	18	19	ND(10)

[1] Volatile organics analyzed using EPA Method 8240, SW-846, Test Methods for Evaluating Solid Waste, 3rd Edition.

[2] Concentrations reported in micrograms per liter (µg/L).

[3] Sample RW18-7-94 is a duplicate sample from Recovery Well RW12.

ND = None detected.

B = Detected in the lab blank.

NOTES: For samples RW9-7-94, RW10-7-94, RW11-7-94, RW12-7-94, and RW18-7-94, cis-1,2-dichloroethylene and trichloroethylene are reported at 5X dilution factor.

Table 3
Summary of Detected Metals Analysis
July 1994 Phase III Well Installation
Carswell Air Force Base - Landfills 4 and 5
Fort Worth, Texas

Sample	Parameter[1]								
	Total No.of Gallons Developed	pH[2]	Temp[2]	Conductivity[2]	Calcium[3]	Iron[3]	Manganese[3]	Sodium[3]	Zinc[3]
RW9-7-94	1,350	6.66	79.0	1,140	130	0.39	0.016	30	0.031
RW10-7-94	475	6.70	74.9	755	130	0.46	0.024	28	0.035
RW11-7-94	330	6.73	73.9	720	130	0.57	0.020	20	0.030
RW12-7-94	350	6.70	73.3	702	130	0.58	0.032	21	0.044
RW18-7-94	350	6.70	73.3	702	130	0.51	0.033	21	0.039
IT-MW-01T	400	6.55	69.4	986	170	0.25	0.14	47	0.028

[1] Concentration reported in milligrams per liter (MG/L), except as noted.

[2] pH measured in standard units (S.U.), temperature measured in degrees Fahrenheit (°F), and conductivity measured in microSiemens per centimeter (µS/cm). These are field parameters.

[3] Metals analysis done by EPA Method 6010, Test Methods for Evaluating Solid Waste, SW-846, Third Edition.

NOTES: Sample RW18-7-94 is a duplicate sample from Recovery Well CAR-RW12.

Analytical results for the following metals in the groundwater samples were nondetect: silver, arsenic, barium, cadmium, chromium, copper, nickel, and selenium.

Table 4
Summary of Detected General Chemistry Parameters
July 1994 Phase III Well Installation
Carswell Air Force Base - Landfills 4 and 5
Fort Worth, Texas

Sample	Parameter[1]												
	Total No.of Gallons Developed	pH[2]	Temp[2]	Conductivity[2]	Alkalinity[3]	Chloride[4]	Bicarbonate[3]	Nitrate as N[5]	Sulfate[4]	Total Dissolved Solids[6]	Chemical Oxygen Demand[8]	Total Organic Carbon[9]	Total Suspended Solids[7]
RW9-7-94	1,350	6.66	79.0	1,140	310	26	310	0.98	55	530	ND	ND	ND
RW10-7-94	475	6.70	74.9	755	210	26	210	1.1	54	480	180	1.3	1.5
RW11-7-94	330	6.73	73.9	720	310	28	310	1.2	41	440	67	ND	ND
RW12-7-94	350	6.70	73.3	702	210	27	210	1.3	38	380	ND	ND	19
RW18-7-94	350	6.70	73.3	702	290	27	240	1.3	38	500	ND	ND	24
IT-MW-01T	400	6.55	69.4	986	330	43	330	NS	120	680	NS	NS	31

[1] Concentration reported in milligrams per liter (MG/L), except as noted.
[2] pH measured in standard units (S.U.), temperature measured in degrees Fahrenheit (°F), and conductivity measured in microSiemens per centimeter (µS/cm). These are field parameters.
[3] Alkalinity and bicarbonate analysis done using EPA Method 310.1, EPA Methods for Chemical Analysis of Water and Wastes. Alkalinity determined by titration with sulfuric acid. Bicarbonate determined by titration with sulfuric acid for alkalinity and calculation of bicarbonate.
[4] Chloride and sulfate analysis done by EPA Method 300.0, The Determination of Inorganic Anions in Water by Ion Chromatography.
[5] Nitrate as N analysis done by EPA Method 353.2, Chemical Analysis of Water and Wastewater.
[6] Total dissolved solids analysis done by EPA Method 160.1, Methods for Chemical Analysis Water and Wastes.
[7] Total suspended solids analysis done by EPA Method 160.2, Method for Chemical Analysis Water and Wastes.
[8] Chemical oxygen demand done by EPA Method 410.4, Metals for Chemical Analysis of Waste and Wastewater.
[9] Total organic carbon analysis done by EPA Method 415.1, Methods for Chemical Analysis of Waste and Wastewater.

ND - none detected
NS - not sampled

NOTE: Sample RW18-7-94 is a duplicate sample from Recovery Well CAR-RW12.

Analytical results for the following parameters in the treatment plant samples were nondetect: carbonate, chemical oxygen demand, settleable solids, total organic carbon, and total suspended solids.

237 16

FIGURES

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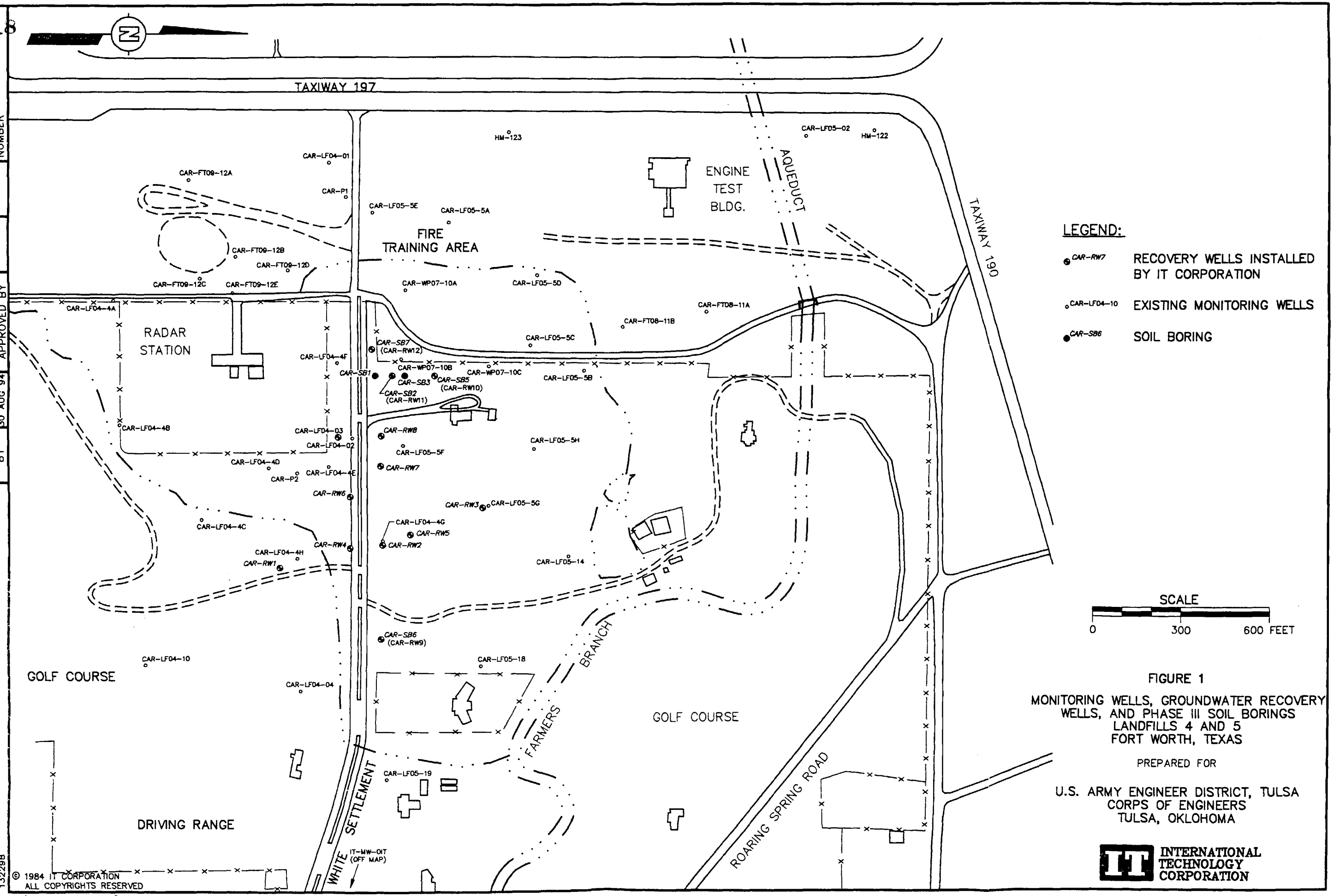
DRAWING NUMBER 305895-B8

CHECKED BY

APPROVED BY

R. WEIBLE 30 AUG 94

DRAWN BY



LEGEND:

- CAR-RW7 — RECOVERY WELLS INSTALLED BY IT CORPORATION
- CAR-LF04-10 — EXISTING MONITORING WELLS
- CAR-SB6 — SOIL BORING

FIGURE 1

MONITORING WELLS, GROUNDWATER RECOVERY WELLS, AND PHASE III SOIL BORINGS
LANDFILLS 4 AND 5
FORT WORTH, TEXAS

PREPARED FOR

U.S. ARMY ENGINEER DISTRICT, TULSA
CORPS OF ENGINEERS
TULSA, OKLOHOMA

INTERNATIONAL TECHNOLOGY CORPORATION

132298

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"Do Not Scale This Drawing"

APPENDIX A

BORING LOGS, WELL CONSTRUCTION DIAGRAMS, AND WELL DEVELOPMENT DATA

Hole No. CAR-SB1

237 20

DRILLING LOG	DIVISION USACE- TULSA	INSTALLATION CARSWELL AFB, FT WORTH, TX	SHEET OF SHEETS

1. PROJECT: CARSWELL AFB - PHASE III
2. LOCATION (Coordinates or Station): LANDFILL 4 AND 5
3. DRILLING AGENCY: GEO PROJECTS INT., INC
4. HOLE NO. (As shown on drawing title and file number): CAR-SB-1
5. NAME OF DRILLER: STEVE WALKER / GEOLOGIST MARK MAKI
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 37.3 FEET
8. DEPTH DRILLED INTO ROCK: NEGLIGIBLE
9. TOTAL DEPTH OF HOLE: 37.3' FEET
10. SIZE AND TYPE OF BIT: 7 7/8 HSA BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-61
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 18; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0 (NO SAMPLES KEPT)
15. ELEVATION GROUND WATER: SATURATION AT 26' BGS
16. DATE HOLE: STARTED 7/12/94 (1330); COMPLETED 7/12/94 (1500)
17. ELEVATION TOP OF HOLE: TBD
18. TOTAL CORE RECOVERY FOR BORING: N/A %
19. SIGNATURE OF INSPECTOR: Richard B. Wise

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
		NA	DK BROWN SANDY CLAY, U. WITH ORGANIC MATERIAL	HAND DUG		Borehole cuttings LEL / PID HNU (1.7 6 N ppm) 25 0 0
	2					
	4	cl	RED-BROWN SANDY CLAY, ROOTLETS NEAR TOP, WHITE CALICHE NODULES AND LAYERS VERY HARD	100	NO SAMPLE collected	
	6			75		
			AS ABOVE, SLIGHTLY MOIST, SOME GRAVEL	100		0 0 0
	8	gc	LIGHT BROWN, SANDY-CLAYEY GRAVEL LOOSE, SLIGHTLY MOIST	83		
	10	SW	RED SAND, FINE TO MEDIUM GRAINED WITH INTERMIXED IRON AND BLACK STAINING, IRON CONCRETIONS CLAY BALLS	83		0 0 0
	12					
	14	SP	TAN, SAND MED GRAINED LOOSE, SLIGHTLY MOIST	50		0 0 0
	16	SC	TAN, CLAYEY SAND, MOIST	100		NOTE: HNU READINGS MAY BE OFF DUE TO HIGH HUMIDITY.
	18	SP	TAN SAND, VERY FINE TO FINE GRAINED, LOOSE WITH BLACK IRON MINERALS AND FOSSIL FRAGMENTS, MOIST	100		0 0 0
	20			100		
	22			100		0 0 0
	24		AS ABOVE INCREASING MOISTURE	100		0 0 0
	26		AS ABOVE WITH COLOR CHANGE TO RED BROWN INCREASING FROM LOOSE TO DENSE, SOME GRAVEL SIZE CLASTS (LIMESTONE)	100		0 0 0 SATURATED AT 26'
	28			58		0 0 0
				66		0 0 0
	30		RED BROWN SAND, U. FINE TO FINE INTERMIXED WITH LIMESTONE GRAVEL, DENSE	83		
	32	SW	TAN, SAND, U. FINE TO COARSE GRAINED, DENSE, SOME SHELL FRAGMENTS SOME BLACK IRON MINERALS GRAINS	75		NOTE: THIS BORING WAS NOT COMPLETED AS A WELL.
	34			75		
	36			100		
	38	LIME-STONE	TOTAL DEPTH = 37.3', TOP OF GOODLAND LIMESTONE, GREY HARD FOSSILIFEROUS	CONTINUOUS 24" SPLIT-SPOON SAMPLER		* PID READINGS WITH AN HNU PI-101 (1.7 eV) INSTRUMENT ○ ALL SOIL DESCRIPTIONS BY VISUAL OBSERVATION

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT 305895 | HOLE NO. CAR-SB1

Hole No. CAR-SB2

DRILLING LOG	DIVISION USACE- TULSA	INSTALLATION CARSWELL AFB FT WORTH, TX	SHEET 1 OF 1 SHEETS

1. PROJECT CARSWELL AFB - PHASE III	10. SIZE AND TYPE OF BIT 7 7/8 ROHRA BIT
2. LOCATION (Coordinates or Station) LANDFILL 4 AND 5	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
3. DRILLING AGENCY GEOPROBES INT. INC	12. MANUFACTURER'S DESIGNATION OF DRILL MOBILE B-61
4. HOLE NO. (As shown on drawing title and file number) CAR-SB2	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0; UNDISTURBED 0
5. NAME OF DRILLER STEVE WALKER / Geologist MARK MAKI	14. TOTAL NUMBER CORE BOXES 0
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER NOT DETERMINED
	16. DATE HOLE: STARTED 7/13/94; COMPLETED 7/13/94
7. THICKNESS OF OVERBURDEN 35.5'	17. ELEVATION TOP OF HOLE TBD
8. DEPTH DRILLED INTO ROCK NEGLIGIBLE	18. TOTAL CORE RECOVERY FOR BORING NA %
9. TOTAL DEPTH OF HOLE 35.5'	19. SIGNATURE OF INSPECTOR Ronald B. Wa

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2, 4, 6, 8	CL	DARK Red brown sandy-CLAY, hard, dry	NO Recovery - Hole LOGGED FROM AUGER CUTTINGS, ALL DEPTHS ARE APPROXIMATE	NO SAMPLES	
	10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34	SP	Red brown SAND, very fine to fine grained loose, slightly moist; Red brown gravelly SAND loose, SATURATED			NOTE: THIS LOCATION WAS DRILLED USING ONLY AUGER CUTTINGS FOR LITHOLOGICAL DESCRIPTIONS. THIS BORING WAS PLACED APPROX 1/2-WAY BETWEEN CAR-SB1 AND CAR-SB3 FOR THE DRILLING AND INSTALLATION OF RECOVERY WELL RW-11
	36	LIME-STONE	TOTAL DEPTH 35.5' BGS AT AUGER REFUSAL TOP OF LIMESTONE			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT 305895 HOLE NO. CAR-SB2

Hole No. CAR-SB-3

237 25

DRILLING LOG

DIVISION	USACE - TULSA
INSTALLATION	CARSWELL AFB, FT WORTH, TX
SHEET	1 OF 1 SHEETS
1. PROJECT	CARSWELL AFB - PHASE III
2. LOCATION (Coordinates or Station)	LANDFILL 4 AND 5
3. DRILLING AGENCY	GEOPROBES TAR, INC.
4. HOLE NO. (As shown on drawing title and file number)	CAR-SB-3
5. NAME OF DRILLER	STEVE WALKER / GEOLOGIST MARK MAKI
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	36.5 FEET
8. DEPTH DRILLED INTO ROCK	NEGLIGIBLE
9. TOTAL DEPTH OF HOLE	36.5 FEET
10. SIZE AND TYPE OF BIT	7 7/8" ~~RHSA~~ BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
12. MANUFACTURER'S DESIGNATION OF DRILL	MOBILE B-61
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 18 / UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES	N/A
15. ELEVATION GROUND WATER	SATURATION AT 24' BGS
16. DATE HOLE	STARTED 7/13/94 / COMPLETED 7/13/94
17. ELEVATION TOP OF HOLE	TBD
18. TOTAL CORE RECOVERY FOR BORING	N/A %
19. SIGNATURE OF INSPECTOR	B. Wi

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2	cl	Dark red brown gravelly-sandy CLAY, hard with some calcite and rootlets, slightly moist	75	No soil samples collected / 2" diameter split-spoon collected 0-36 Feet	PID HNU 101, 11.7eV IN/PPM Borehole Breathing Zone LEL 0 0 0
				83		Raw previous night ~1" 0 0 0
	4					
	6	cl	Tan - red and brown mottled gravelly-sandy CLAY, hard some angular limestone clasts, dry	75		0 0 0
	8			100		0 0 0
				50		0 0 0
	10					
	12	SP	Red brown SAND, u. fine to fine grained, loose, some gravel clasts, some clay balls, moist	92		0 0 0
				25		Slight hydrocarbon odor
	14					
	16		As above some color changes to tan	83		0 0 0
	18			25		
				50		0 0 0
	20					hydrocarbon odor
	22			25		
			As above, very moist	83		0 0 0
	24		As above, with shell fragments, slight hydrocarbon odor, saturated	50		Soil saturated at 24' 0 0 0
	26					
	28		As above, coarser sand percentage increasing	100		
				25		0 0 0
	30		Red brown SAND, u. fine to coarse grained, some shell fragments and gravel clasts, dense, saturated	100		Note: This boring was not completed as a well
	32			83		0 0 0
	34			83		0 0 0
	36			No spoon		
	38	Rock LS	Total depth 36.5' top of Goodland Limestone, hard gray fossiliferous			o All soil observations and classifications done visually

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT 305895 HOLE NO. CAR-SB-3

Hole No. CAR-SB-5

237 23

DRILLING LOG	DIVISION USACE- TULSA	INSTALLATION CARSWELL AFB, FT WORTH TX	SHEET 1 OF 1 SHEETS

1. PROJECT: CARSWELL AFB- PHASE III
2. LOCATION (Coordinates or Station): LANDFILL 4 AND 5
3. DRILLING AGENCY: GEOPROJECTS INT. INC
4. HOLE NO. (As shown on drawing title and file number): CAR-SB-5
5. NAME OF DRILLER: G STEVE WALKER / GEOLOGIST MARK MALCI
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 35.5 FEET
8. DEPTH DRILLED INTO ROCK: NEGLIGIBLE
9. TOTAL DEPTH OF HOLE: 35.5 FEET
10. SIZE AND TYPE OF BIT: 7 7/8" DD HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-61
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 18 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: SATURATED 22 FEET BGS
16. DATE HOLE: STARTED 7/12/94 | COMPLETED 7/12/94
17. ELEVATION TOP OF HOLE: TBD
18. TOTAL CORE RECOVERY FOR BORING: N/A %
19. SIGNATURE OF INSPECTOR: R. B. Wise

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2	CL	Dark red brown gravelly-sandy CLAY, with rootlets very stiff, dry	92	NO SOIL SAMPLES COLLECTED FROM SPLIT-SPOONS / 2" SPLIT SPOONS COLLECTED FROM SURFACE TO TOTAL DEPTH	PID HNU (ppm) 11.7eV Remote: Borehole 0, Breathing Zone 0, LEL 0 (IN PPM)
	4			100		0 / 0 / 0
	6	CL	White w/ dark red brown very gravelly CLAY, w stiff, angular to subangular limestone clasts, calcite cement dry	100		0 / 0 / 0
	8			25		0 / 0 / 0
	10	SP	Red brown SAND, fine to medium grained, loose, some clay balls, dry	85		0 / 0 / 0
	12			83		0 / 0 / 0
	14	SW	Red brown to tan gravelly SAND, v. fine to fine grained, loose, some sub rounded limestone clasts, calcite cement and iron staining. dry	100		0 / 0 / 0
	16			75		0 / 0 / 0
	18			100		0 / 0 / 0
	20		As above, slightly moist	100		0 / 0 / 0 NO ODOR
	22		As above, very moist	100		0 / 0 / 0
	24		TAN, gravelly SAND, fine to coarse grained, loose rounded gravel clasts, shell fragments	100		SATURATED AT 22' BGS / 0 / 0 / 0 NO ODORS
	26			50		
	28			25		
	30		As above, dense	75		NO ODOR / 0 / 0 / 0
	32	SW	TAN SAND, very fine to coarse grained, loose some gravel clasts and shell fragments	50		0 / 0 / 0
	34			100		0 / 0 / 0
	36	ROCK LS	TOTAL DEPTH 35.5', TOP Goodland Limestone, gray fossiliferous	100		NOTE: THIS BORING COMPLETED AS WELL RW-10. ALL SOIL OBSERVATIONS AND CLASSIFICATIONS DONE VISUALLY

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT 305895 | HOLE NO. CAR-SB-5

Hole No. CAR-SB-6

237 2

DRILLING LOG	DIVISION USACE- TULSA	INSTALLATION Carswell AFB, Ft Worth, TX	SHEET 1 OF 1 SHEETS

1. PROJECT: Carswell AFB- Phase III
2. LOCATION (Coordinates or Station): Landfill 4 and 5
3. DRILLING AGENCY: Geoprobes Dvt. Inc
4. HOLE NO. (As shown on drawing title and file number): CAR-SB-6
5. NAME OF DRILLER: Steve Walker / Geologist Mark Malli
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 26.33 Feet
8. DEPTH DRILLED INTO ROCK: Negligible
9. TOTAL DEPTH OF HOLE: 26.33 Feet
10. SIZE AND TYPE OF BIT: 7 7/8" OD HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B-61
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: Saturated at 18' BGS
16. DATE HOLE: STARTED 7/13/94 COMPLETED 7/13/94
17. ELEVATION TOP OF HOLE: TBD
18. TOTAL CORE RECOVERY FOR BORING: N/A %
19. SIGNATURE OF INSPECTOR: R Win

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g			
	2	CL	Dark red-brown sandy-gravelly CLAY, hard rocks, some gravel clasts	NA		Hand dug to 2'			Spoon Lost
	4			100		PID Hnu 101 Ppm			
	6			100		Borehole Breathing Zone (IN ppm)			
	8	SP	Red-brown SAND, v. fine to fine grained, loose, some coarse grains, iron stain and clay balls, dry	92	2	1	0	5	
	10			75		1	0	2	
	12		As above, tan	75		0	0	2	
	14			67					
	16		As above, slightly moist	67		0	0	3	
	18			50					
	20	SW	Tan to red-brown SAND, v. fine to coarse grained intermixed with fine to coarse gravel clasts, still fragments and iron stain.	25		0	0	1	
	22			25		20	0	0	
	24			0		No Recovery			
	26			0		No Recovery			
	28	Rock LS	TOTAL DEPTH 26.33' Top of Goodland Fm grey hard limy-shale, fissile						

NO SOIL SAMPLES Collected FROM SPLIT-SPOONS / 2" SPLIT-SPOONS Collected FROM 2' TOTAL DEPTH

Note this boring was completed as well RW9.

PID scans on borehole and split-spoon soils

All descriptions and classifications are visual

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT 305895 HOLE NO. CAR-SB-6

Hole No. CAR-SB-7

237 25

DRILLING LOG	DIVISION: USAFE - TULSA	INSTALLATION: CARSWELL AFB, FT WORTH, TX	SHEET 1 OF 1 SHEETS

1. PROJECT: CARSWELL AFB - PHASE III
2. LOCATION (Coordinates or Station): LANDFILL 4 AND 5
3. DRILLING AGENCY: GEOPROBES INT. INC
4. HOLE NO. (As shown on drawing title and file number): CAR-SB-7
5. NAME OF DRILLER: STEVE WALKER / Geologist MANUL MAKI
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 40.5 FEET
8. DEPTH DRILLED INTO ROCK: NEGLIGIBLE
9. TOTAL DEPTH OF HOLE: 40.5 FEET
10. SIZE AND TYPE OF BIT: 7 7/8" OD HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: MOBIE B-61
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 19; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: SATURATED AT 26 FEET BGS
16. DATE HOLE: STARTED 7/13/94; COMPLETED 7/13/94
17. ELEVATION TOP OF HOLE: TBD
18. TOTAL CORE RECOVERY FOR BORING: N/A %
19. SIGNATURE OF INSPECTOR: Rick B. Wise

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
		CL	DARK red-brown CLAY, very stiff, some gravel, moist	NA	29 COLLECTED FROM 2' TO 40.5' FROM SPLIT SPOONS/ASPLIT-SPOONS NO SOIL SAMPLES	PID HNU 101-117 on readings Bore hole 0; Breathing Zone 0; Well 0 (IN PPM)
	2					
			AS ABOVE WITH ROOTLETS AND SOME gravel and sand, Some caliche	83		0 0 0
	4			100		0 0 0
	6		Light red-brown sandy-gravelly CLAY, interlayered with caliche	100		0 0 0
	8			100		NO ODOR 0 0 0
	10	SP	Red-brown SAND, very fine to fine grained, loose moist, Sand is mostly QTZ	67		NO ODOR 0 0 0
	12			83		
	14			100		0 0 0
	16		AS ABOVE, TAN COLOR	83		0 0 0
	18		AS ABOVE, red-brown color	83		0 0 0
	20		AS ABOVE, TAN, MOIST	83		0 0 0
	22			83		0 0 0
	24			75		1 0 0
	26		AS ABOVE, DENSE, Fine to medium grained quartz sand	67		SATURATED AT 26' BGS
	28	SP	TAN SAND, very fine to medium grained, DENSE, SATURATED	17		NOTE: THIS BORING WAS COMPLETED AS WELL RW-12
	30		TAN to red-brown SAND very fine to medium grained,	83		0 0 0
	32	SW	DENSE, Some fossil fragments	50		NOTE: ALL DESCRIPTIONS AND CLASSIFICATIONS ARE VISUAL 1 0 0
	34	SP	And iron staining, sand mostly QTZ. From 32' to 33' coarse sand and pea gravel.	75		5 2 0 Quickly dissipates
	36		From 33 to TD, SAND AS ABOVE, Some pea gravel.	75		20 4 0 Quickly dissipates
	38			100		20 0 0
	40					

NOTES
TOP OF Goodland 40.5'
TOTAL DEPTH 40.5
Gray Fossiliferous Limestone

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT EAC 305895 HOLE NO. CAR-SB-7

Hole No. IT-MW-01T

237 26

DRILLING LOG	DIVISION: USACE- TULSA	INSTALLATION: CARSWELL AFB FT WORTH, TX	SHEET 1 OF 1 SHEETS

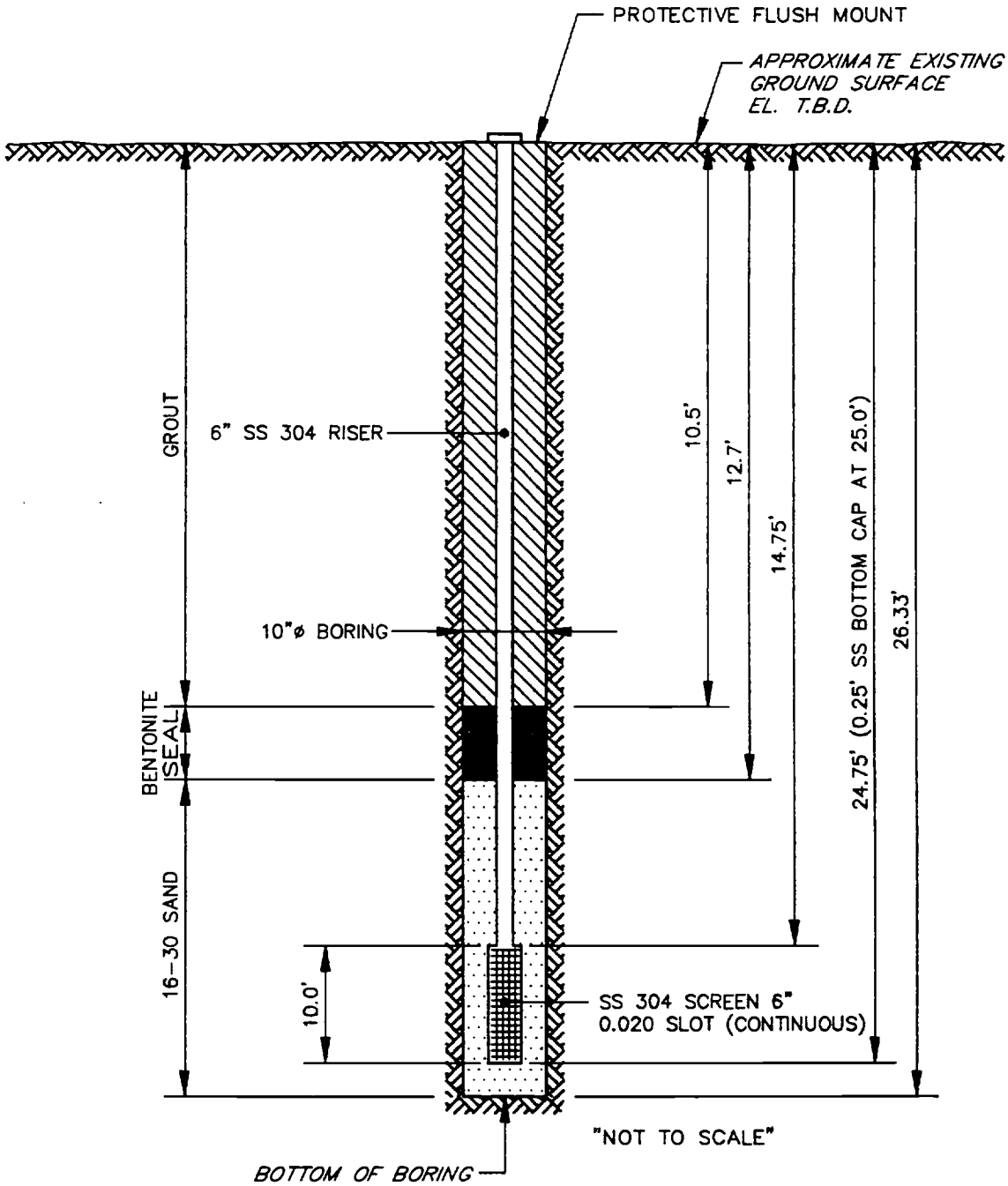
1. PROJECT: CARSWELL AFB- PHASE III
2. LOCATION (Coordinates or Station): LANDFILL 4 AND 5
3. DRILLING AGENCY: GEOPROTECTS INT, INC
4. HOLE NO. (As shown on drawing title and file number): IT-MW-01T
5. NAME OF DRILLER: STEVE WALKER / MARK MAKI (GEOLOGIST)
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 22.25
8. DEPTH DRILLED INTO ROCK: 0.5 FEET
9. TOTAL DEPTH OF HOLE: 22.75 FEET
10. SIZE AND TYPE OF BIT: 7 7/8" OD HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: MOBILE B-61
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 12; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: SATURATED AT 15.5' BGS
16. DATE HOLE: STARTED 7/14/94; COMPLETED 7/14/94
17. ELEVATION TOP OF HOLE: TBD
18. TOTAL CORE RECOVERY FOR BORING: N/A %
19. SIGNATURE OF INSPECTOR: [signature]

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2	CL	DARK red-brown sandy-gravelly CLAY, hard, slightly moist roots near ground surface	25	NO SOIL SAMPLES COLLECTED FROM SPLIT SPOONS COLLECTED FROM SURFACE TO TOTAL DEPTH	PID HNU IOX Readings (IN ppm): Breath Zone 0; Well Bore 6; Soil 35
	4		Brown with white mottling sandy-gravelly CLAY, hard intermixed with rock fragments only	75		0; 1; 5
	6			92		0; 1; 5
	8		Light brown to tan sandy CLAY very hard low staining, blocky texture grey mottling in places	100		0; 1; 2
	10			100		0; 0; 0
	12		As above, very moist	100		
	14			100		SATURATED AT 15.5' BGS
	16	GC	Tan and brown clayey-sandy GRAVEL, loose, gravel composed of limestone and clay clasts and fragments	50		0; 0; 0
	18			25		
	20	CL	Tan and grey sandy-CLAY, hard, plastic, iron staining 6" gravel layer 21.5' to 22'	100		0; 0; 0
	22			100		0; 0; 0
	24	ROCK SHALE	TOTAL DEPTH 22.5 FEET TOP OF Goodland (?) Fm Grey fissile limey SHALE, hard fossiliferous.			NOTE: THIS BORING IS MONITORING WELL IT-MW-01T. ALL DESCRIPTIONS AND CLASSIFICATIONS ARE VISUAL

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT 305895 | HOLE NO. IT-MW01T

DRAWING NUMBER	305895-A18
CHECKED BY	
APPROVED BY	
DRAWN BY	jil 8-22-94



RECOVERY WELL RW-9
LANDFILL 4 AND 5
CARSWELL AIR FORCE BASE

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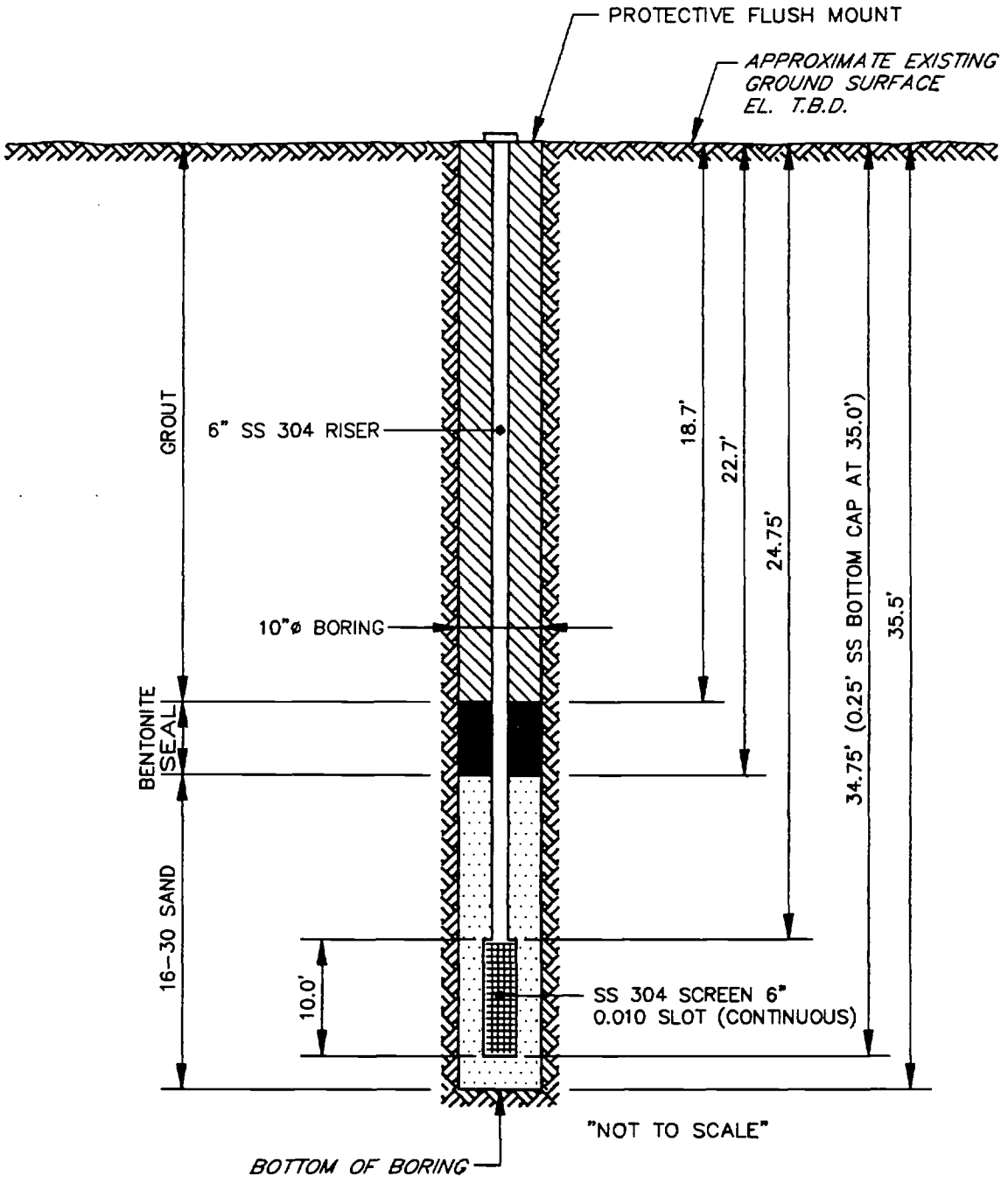
	8-22-94	APPROVED BY			



RECOVERY WELL RW-10
LANDFILL 4 AND 5
CARSWELL AIR FORCE BASE

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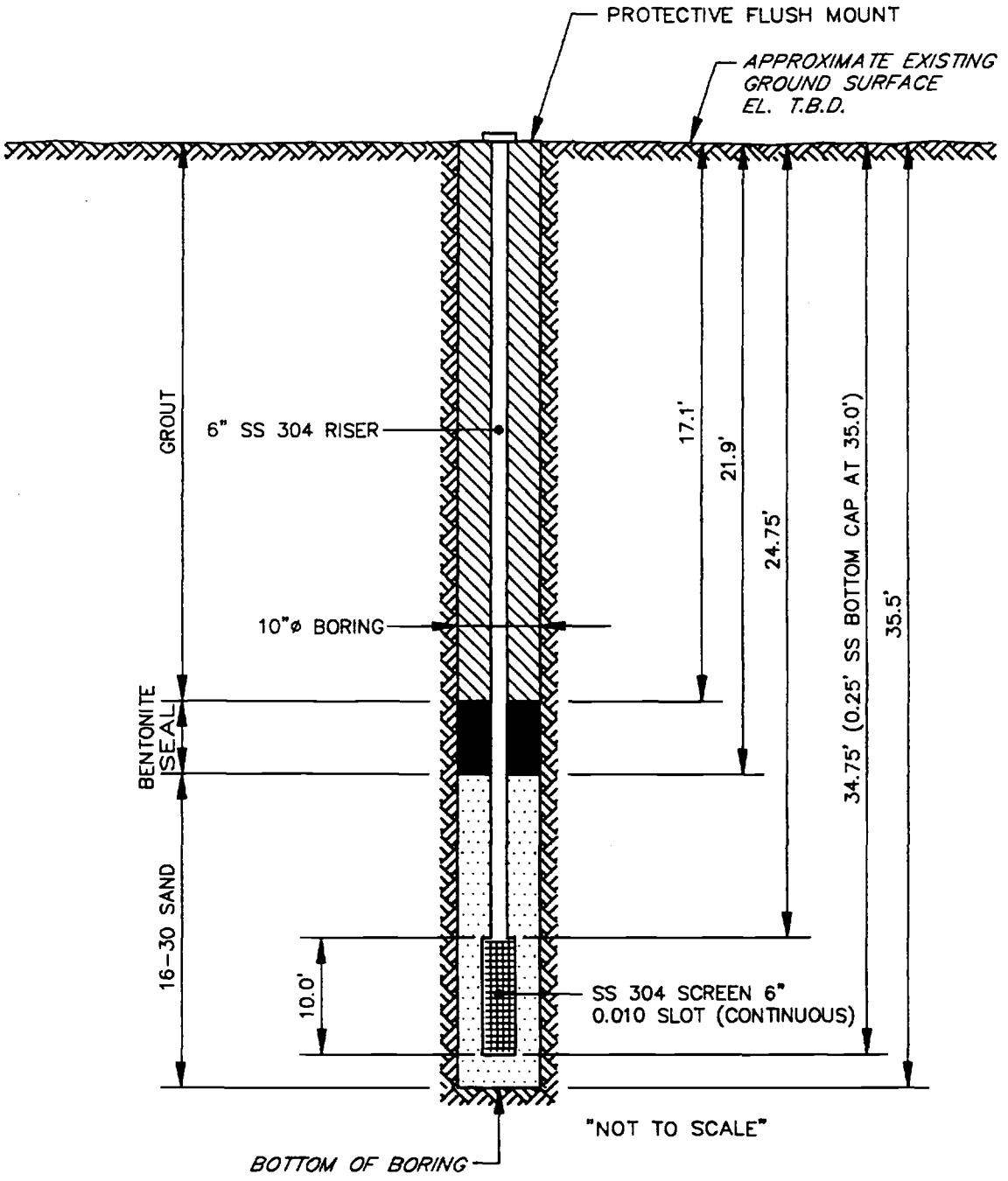

RECOVERY WELL RW-11
LANDFILL 4 AND 5
CARSWELL AIR FORCE BASE

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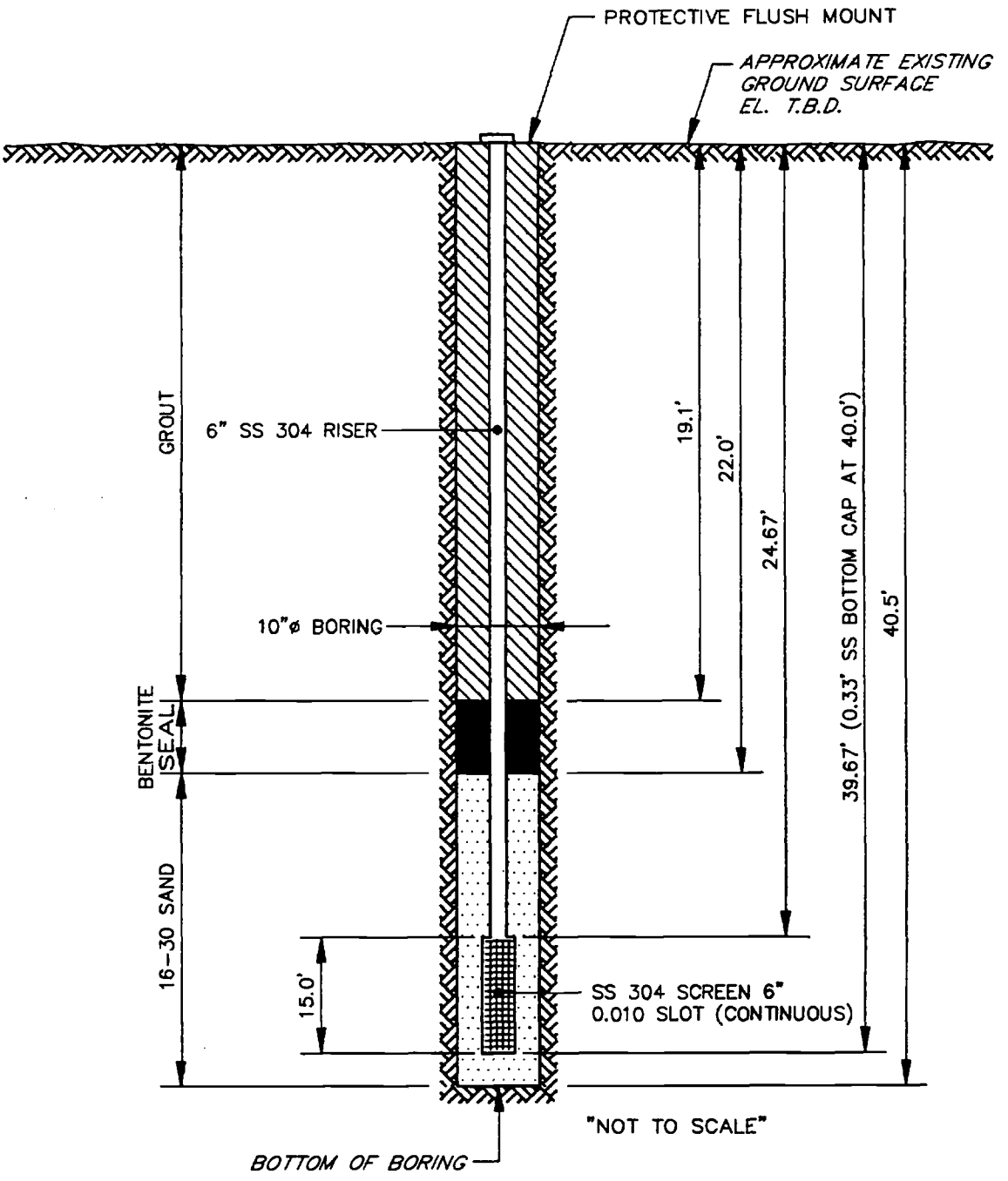

RECOVERY WELL RW-12
LANDFILL 4 AND 5
CARSWELL AIR FORCE BASE

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DRAWING NUMBER	305895-A22
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jil	8-22-94
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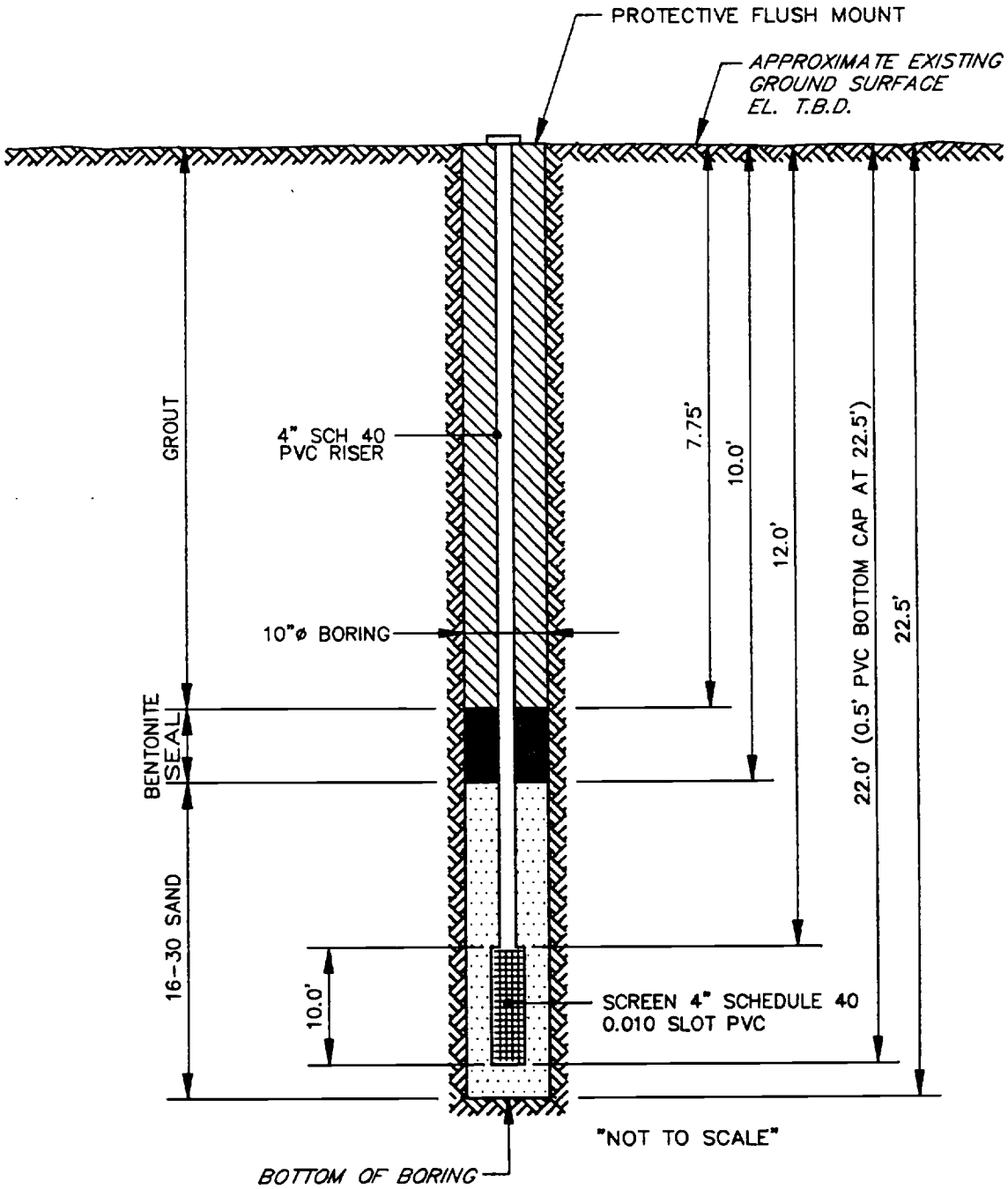

RECOVERY WELL IT-MW-01T
LANDFILL 4 AND 5
CARSWELL AIR FORCE BASE

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INTERNATIONAL TECHNOLOGY CORPORATION

MONITORING WELL DEVELOPMENT RECORD

237 32

Project Name: CARSWELL LANDFILL 4A-05 Project No.: 305895

Well No.: RW9 Date Developed: 7/29/94

Field Personnel: R. WILE (IT), C. MAULDIN AND T. Spinelli (GPI)

Weather Conditions: CLOUDY, COOL AT START,

Well Development Method: BAIL / SURGE / PUMP w/ SOME SURGING

Total Well Depth: 25'	Time Started: 1000
Depth to Water Table: 8' pre BAIL / 18' AFTER BAIL	Time Completed: 1730 NOT CONTINUOUS
Height of Water Column: 17	Notes: * DURING DEVELOPMENT WE STOPPED TO GO GET PARTS AND SUPPLIES o ~8' OF WATER ON BAILER AT START o PUMPED WELL AT 10 GPM W/ 1.5' DRAWDOWN IN 1/2hr
Well Diameter: 6"	
Well Volume: 225 Gallons	

Well Volume Removed	Temperature	pH	Specific Conductance	Turbidity
Initial Reading PUMPING Gallons				
800	79°F	6.66	1,140 µS/cm	CLEAR
NO OTHER READINGS COLLECTED			DURING DEVELOPMENT	
SAMPLE COLLECTED AT 800 GALLONS				

Comments: BAILED 400 GALLONS / SURGED 1HR / BAILED 50 GALLONS CLAY / ed + PUMPED 950 GALLONS TOTAL + 400 GALLONS BAILED = 1350 GALLONS

Prepared by: RICK WILE

Signature: Rick Wile

Date: 7/29/94

QAR.8.92

INTERNATIONAL TECHNOLOGY CORPORATION

MONITORING WELL DEVELOPMENT RECORD

237 33

Project Name: CARSWELL LANDFILL GAMS Project No.: 305895

Well No.: RW10 Date Developed: 7/31/94

Field Personnel: R. WILE (IT), C. MAULDIN AND T. SPINELLI (GPI)

Weather Conditions: CLEAR, HOT, LT BREEZE FROM SOUTH

Well Development Method: BAIL AND SURGE, PUMP AND SURGE

Total Well Depth: 35.0	Time Started: 1410
Depth to Water Table: 22.5 PREBAIL	Time Completed: 1545
Height of Water Column: 12.5'	Notes: 0 WATER level DID NOT DROP DURING BAILING
Well Diameter: 6"	0 AT 9.8 GPM PUMP RATE, W.L. STABLE AT 25.3'
Well Volume: 18 Gallons	

Well Volume Removed	Temperature	pH	Specific Conductance	Turbidity
Initial Reading Gallons Pumped				
250 Pumped	77.1	6.49	774 µS/cm	SLI CLOY
300	76.4	6.65	768	CLEAR
350	75.0	6.67	758	CLEAR
375	74.9	6.70	755	CLEAR
Sample collected 375 Gallons				

Comments: BAILED 100 Gallons / SURGE / PUMPED

TOTAL FLUID 100 BAILED + 375 PUMPED = 475 Gallons

Prepared by: Rick Wile

Signature: Rick Wile

Date: 7/31/94

988.A.92

INTERNATIONAL TECHNOLOGY CORPORATION

MONITORING WELL DEVELOPMENT RECORD

237 34

Project Name: CARSWELL LANDFILL 4 AND 5 Project No.: 305895

Well No.: RW11 Date Developed: 7/31/94

Field Personnel: R. WILCE (IT), C. MAULDIN AND T. Spinelli (GPI)

Weather Conditions: SUNNY, HOT, BREEZE FROM SOUTH

Well Development Method: BAIL, PUMP AND SURGE

Total Well Depth: 34.8'	Time Started: 1605
Depth to Water Table: 24.8' PREBAIL	Time Completed: 1735
Height of Water Column: 10'	Notes: o WATER level 28' @ 9.8 GPM o AT 200 GALLONS WATER level 26.9' @ 9.8 GPM NO measurable drawdown
Well Diameter: 6"	
Well Volume: 15 Gallons	

Well Volume Removed	Temperature	pH	Specific Conductance	Turbidity
Initial Reading Gallons pumped			µS/CM	
175 GALLONS	75.6	6.53	725	SLI CLDY
200 Gallons	73.6	6.68	717	CLEAR
250 Gallons	74.0	6.73	720	CLEAR
300 Gallons	73.9	6.73	720	CLEAR

Comments: BAILED 30 Gallons / Pumped 100 GALLONS / SURGED / CLEARED UP AT 150 GALLONS / TOTAL FLUID 30 + 300 = 330 Gallons

Prepared by: R. WILCE

Signature: R. Wilce

Date: 7/31/94

QRA.A.92

TECHNOLOGY CORPORATION

DEVELOPMENT RECORD

237 35

Project Name: Caldwell Landfill Yard Project No.: 305895

Well No.: RW 12 Date Developed: 7/31/94

Field Personnel: R. Wice (IT), C. Maulding and T. Spinelli (GPI)

Weather Conditions: Sunny, Hot, lt Breeze from South, Cooler at end

Well Development Method: Bail / Surge / Pump

Total Well Depth: 40.05	Time Started: 1805
Depth to Water Table: 27.60 pre Bail	Time Completed: 1930
Height of Water Column: 12.45	Notes: 0 at 9.46 gpm, depth to water stable @ 29.7' throughout development
Well Diameter: 6"	
Well Volume: 18.6 Gallons	

Well Volume Removed	Temperature	pH	Specific Conductance	Turbidity
Initial Reading Gallons Pumped	0F		µS/cm	
150 Gallons	74.7	6.60	720	Cloy
200 Gallons	73.5	6.64	710	Clear
250	72.4	6.69	640	Clear
275	71.1	6.74	700	Clear
300	73.3	6.70	702	Clear
Sample collected at 300 Gallons pumped				

Comments: Bailed 50 Gallons / Surged / Pumped 150 Muddy

Total Fluids Bailed 50 + 300 pumped = 350 Gallons

Prepared by: Rick Wice

Signature: [signature]

Date: 7/31/94

TECHNOLOGY CORPORATION

MONITORING WELL DEVELOPMENT RECORD

Project Name: CARSWELL AFB LANDFILL YARDS Project No.: 305895

Well No.: IT-MW-01T Date Developed: 8/1/94

Field Personnel: R. WICE (IT), C. MAULDIN AND T. Spinelli (GPI)

Weather Conditions: CLEAR, WARM (EARLY MORNING)

Well Development Method: BAIL / SURGE w/ PUMP / PUMP

Total Well Depth:	22.5'	Time Started:	0742
Depth to Water Table:	12.92'	Time Completed:	0850
Height of Water Column:	9.58'	Notes:	AT 9.5 GPM, DEPTH TO WATER STABLE AT 13.91' THROUGHOUT DEVELOPMENT
Well Diameter:	4"		
Well Volume:	6.4 Gallons		

Well Volume Removed	Temperature	pH	Specific Conductance	Turbidity
Initial Reading Gallons Pumped	°F		µS/cm	
~~2150~~ 200 Gallons	71.6	6.46	989	CLDY
225	70.0	6.51	994	CLEAR
250	70.0	6.58	906	SLI CLDY
300	69.9	6.58	987	SLI CLDY
350	69.4	6.55	986	CLEAR
SAMPLE COLLECTED AT	350 Gallons			

Comments: BAILED 50 + 350 PUMPED = 400 GALLONS REMOVED

Prepared by: Rick Wice

Signature: [signature]

Date: 8/1/94

APPENDIX B

SAMPLE COLLECTION LOGS

INTERNATIONAL TECHNOLOGY CORPORATION

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GROUND WATER SAMPLE COLLECTION LOG

Project Name: CARSWELL LANDFILL YARDS
Project No.: 305895
Request-for-Analysis Control No.:
Chain-of-Custody Control No.:
Sample No.: RW9-7-94

Sample Location or: RW9
Well ID (attach map if necessary):
Date and Time Collected: 7/29/94 1725
Sample Collected by: RWice
Checked by (Office)/Date: RW 8/2/94

EQUIPMENT

Purging Method/Equipment: Sample collected from well after clear flow during Development
Sampling Equipment/ID No.: Direct fill into sample containers

6" Diameter = 1.5 gal/ft 4" Diameter = 0.67 gal/ft 2" Diameter = 0.17 gal/ft

PURGING INFORMATION

Casing ID (a) (in.) ____ Unit Casing Volume (b) ____ ( )
Depth to Well Bottom (c) ____ ( ) Depth to Water (d) ____ ( )
Length of Static Water Column in Casing (e) (c) - (d) = ____ - ____ = ____ ( )
Casing Water Volume (f) = (b) × (e) = ____ = ____ ( )
Casing Volumes = ____ × (f) = ____ ( )

N/A Well Development

Volume Purged ( )	Temp. (°F)	Conductance (µs/cm)	Time	Water Description (Color, Turbidity, Odor, Oil)	pH
800 Gallons Purged	79.0	1,140	1725	CLEAR	6.66

Total Volume Purged: ____ Time: ____ Purged Dry (Y/N): ____

SAMPLE PACKAGING

Container(s) Type and Volume	Filtered (Y/N)	Preservatives	Parameters
2-40ml	N	HCL	VOA 8240
1-2.5L	N	NONE	SV 8270
1-500ml	N	NITRIC	METALS
1-1L	N	NONE	GEN CHEMISTRY
1-250ml	N	H2SO4	COD TOC
1-250ml	N	H2SO4	NITRATE

INTERNATIONAL TECHNOLOGY CORPORATION

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GROUND WATER SAMPLE COLLECTION LOG

Project Name: Caldwell
Project No.: 305895
Request-for-Analysis Control No.: 406810/407506/407509
Chain-of-Custody Control No.: As Above
Sample No.: RW10-7-94

Sample Location or: RW10
Well ID (attach map if necessary):
Date and Time Collected: 7/31/94 1545
Sample Collected by: R. Wice
Checked by (Office)/Date: RW 8/2/94

EQUIPMENT

Purging Method/Equipment: Sample collected from well after clear flow during Development
Sampling Equipment/ID No.: Direct fill into sample containers

6″ Diameter = 1.5 gal/ft 4″ Diameter = 0.67 gal/ft 2″ Diameter = 0.17 gal/ft

PURGING INFORMATION

Casing ID (a) (in.) ____ Unit Casing Volume (b) ____ ( )
Depth to Well Bottom (c) ____ ( ) Depth to Water (d) ____ ( )
Length of Static Water Column in Casing (e) (c) − (d) = ____ − ____ = ____ ( )
Casing Water Volume (f) = (b) × (e) = ____ × ____ = ____ ( )
Casing Volumes = ____ × (f) = ____ ( )

N/A
Well Development

Volume Purged ( )	Temp. (°F)	Conductance (µS/cm)	Time	Water Description (Color, Turbidity, Odor, Oil)	pH
375 Gallons Purged	74.9	755	1545	Clear	6.70

Total Volume Purged: ____ Time: ____ Purged Dry (Y/N): ____

SAMPLE PACKAGING

Container(s) Type and Volume	Filtered (Y/N)	Preservatives	Parameters
2-40ml	N	HCL	VOA 8240
1-2.5L	N	NONE	SV 8270
1-500ml	N	NITRIC	METALS
1-1L	N	NONE	GEN CHEMISTRY
1-250ml	N	H2SO4	COD/TOC
1-250ml	N	H2SO4	NITRATE

727-10-89

INTERNATIONAL TECHNOLOGY CORPORATION

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GROUND WATER SAMPLE COLLECTION LOG

Project Name: CARSWELL LANDFILL 4 AND 5
Project No.: 305895
Request-for-Analysis Control No.: 406610/407504/407509
Chain-of-Custody Control No.: AS ABOVE
Sample No.: RW11 7-94

Sample Location or: RW 11
Well ID (attach map if necessary):
Date and Time Collected: 7/31/94 1735
Sample Collected by: R Wice
Checked by (Office)/Date: R. Ll 8/2/94

EQUIPMENT

Purging Method/Equipment: Sample collected from well after clear flow during Development
Sampling Equipment/ID No.: Direct fill into sample containers

6″ Diameter = 1.5 gal/ft 4″ Diameter = 0.67 gal/ft 2″ Diameter = 0.17 gal/ft

PURGING INFORMATION

Casing ID (a) (in.) ____ Unit Casing Volume (b) ____ ( )
Depth to Well Bottom (c) ____ ( ) Depth to Water (d) ____ ( )
Length of Static Water Column in Casing (e) (c) - (d) = ____ - ____ = ____ ( )
Casing Water Volume (f) = (b) × (e) = ____ × ____ = ____ ( )
Casing Volumes = ____ × (f) = ____ ( )

NA Well Development

Volume Purged ( )	Temp. (°F)	Conductance (µs/cm)	Time	Water Description (Color, Turbidity, Odor, Oil)	pH
300 Gallons Purged	73.9	720	1735	CLEAR	6.73
~~NOT~~					

Total Volume Purged: ____ Time: ____ Purged ~~Dry~~ (Y/N): ____

SAMPLE PACKAGING

Container(s) Type and Volume	Filtered (Y/N)	Preservatives	Parameters
2-40ml	N	HCL	VOA 8240
1-2.5L	N	NONE	SV 8270
1-500ml	N	NITRIC	METALS
1-1L	N	NONE	GEN CHEMISTRY
1-250ml	N	H2SO4	COD TOC
1-250ml	N	H2SO4	NITRATE

727-10-89

INTERNATIONAL TECHNOLOGY CORPORATION

GROUND WATER SAMPLE COLLECTION LOG

Project Name: Caldwell LF4 AND 5
Project No.: 305895
Request-for-Analysis Control No.: 406810/407506/407509
Chain-of-Custody Control No.: 406810/407506/407509
Sample No.: RW 12-7-94

Sample Location or: RW 12
Well ID (attach map if necessary):
Date and Time Collected: 7/29/94 1928
Sample Collected by: R. Wice
Checked by (Office)/Date: RW 8/2/94

EQUIPMENT

Purging Method/Equipment: Sample collected from well after clear flow during Development
Sampling Equipment/ID No.: Direct fill into sample containers

6" Diameter = 1.5 gal/ft 4" Diameter = 0.67 gal/ft 2" Diameter = 0.17 gal/ft

PURGING INFORMATION

Casing ID (a) (in.) _____ Unit Casing Volume (b) _____ ( )
Depth to Well Bottom (c) _____ ( ) Depth to Water (d) _____ ( )
Length of Static Water Column in Casing (e) (c) - (d) = _____ - _____ = _____ ( )
Casing Water Volume (f) = (b) × (e) = _____ _____ = _____ ( )
Casing Volumes = _____ × (f) = _____ ( )

N/A Well Development

Volume Purged ( )	Temp. (°F)	Conductance (µS/cm)	Time	Water Description (Color, Turbidity, Odor, Oil)	pH
300 Gallons Purged	73.3	702	1928	Clear	6.70
NOTE: Duplicate collected at 1928		Sample RW 18-7-94 Sut marker		A duplicate for RW 12-7-94 1930 to MASK from LAB	
NOTE: MS/MSD collected at this location		Sample RW 12-7-94 for		VOA, SV, AR metals (MS only) consistent w/ the collection of	
these samples.					

Total Volume Purged: _____ Time: _____ Purged Dry (Y/N): _____

SAMPLE PACKAGING

Container(s) Type and Volume	Filtered (Y/N)	Preservatives	Parameters
2-40ml	N	HCL	VOA 8240
1-2.5L	N	NONE	SV 8270
1-500ml	N	Nitric	Metals
1-1L	N	NONE	Gen Chemistry
1-250ml	N	H2SO4	COD TOC
1-250ml	N	H2SO4	Nitrate

INTERNATIONAL TECHNOLOGY CORPORATION

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GROUND WATER SAMPLE COLLECTION LOG

Project Name: Caldwell Landfill 4AMS
Project No.: 305845
Request-for-Analysis Control No.: 406810 / 407508 / 407509
Chain-of-Custody Control No.: AS ABOVE
Sample No.: IT-MW-01T

Sample Location or: MW IT-MW-01T
Well ID (attach map if necessary):
Date and Time Collected: 8/1/94 850
Sample Collected by: R. Lice
Checked by (Office)/Date: RW 8/2/94

EQUIPMENT

Purging Method/Equipment: Sample collected from well after clear flow during Development
Sampling Equipment/ID No.: Direct fill into sample containers

6" Diameter = 1.5 gal/ft 4" Diameter = 0.67 gal/ft 2" Diameter = 0.17 gal/ft

PURGING INFORMATION

Casing ID (a) (in.) _____ Unit Casing Volume (b) _____ ( )
Depth to Well Bottom (c) _____ ( ) Depth to Water (d) _____ ( )
Length of Static Water Column in Casing (e) (c) - (d) = _____ - _____ = _____ ( )
Casing Water Volume (f) = (b) × (e) = _____ × _____ = _____ ( )
Casing Volumes = _____ × (f) = _____ ( )

N/A
Well Development

Volume Purged ( )	Temp. (°F)	Conductance (µS/cm)	Time	Water Description (Color, Turbidity, Odor, Oil)	pH
350 Gallon Purged	69.4	986	0850	CLEAR	6.55

Total Volume Purged: _____ Time: _____ Purged Dry (Y/N): _____

SAMPLE PACKAGING

Container(s) Type and Volume	Filtered (Y/N)	Preservatives	Parameters
2-40ml	N	HCL	VOA 8240
1-2.5L	N	NONE	SV 8270
1-500ml	N	NITRIC	METALS
1-1L	N	NONE	GEN CHEMISTRY
1-250ml	N	H2SO4	COD, TOC
1-250ml	N	H2SO4	NITRATE

727-10-89

APPENDIX C

CERTIFICATES OF ANALYSIS AND CHAIN-OF-CUSTODY FORMS

Quanterra
Environmental Services

CERTIFICATE OF ANALYSIS

IT CORPORATION
2790 MOSSIDE BLVD.
MONROEVILLE, PA 15146-2792
RICK WICE

Date: 09/22/94

Work Order: B4-08-024 P.O. Number: 159217

This is the Certificate of Analysis for the following samples:

Client Work ID: CARSWELL PHASE III 305895
Date Received: 08/02/94
Number of Samples: 12
Sample Type: WATER

I. Introduction
Revised report. Previously reported on 08/30/94.

Samples were labeled as follows:

SAMPLE IDENTIFICATION		LABORATORY #
RW9-7-94		B4-08-024-01
IT-MW-01T		B4-08-024-02
RW11-7-94		B4-08-024-03
RW10-7-94		B4-08-024-04
RW12-7-94		B4-08-024-05
RW12-7-94	MATRIX SPIKE	B4-08-024-06
RW12-7-94	MSD	B4-08-024-07
RW18-7-94		B4-08-024-08
TRIP BLANK		B4-08-024-09
LAB BLANK		B4-08-024-10
RW9-7-94	MATRIX SPIKE	B4-08-024-11

Reviewed and Approved:

Jon Bartell
Laboratory Director

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

Samples, continued from above:

SAMPLE IDENTIFICATION		LABORATORY #
IT-MW-01T	MATRIX SPIKE	B4-08-024-12

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. Quanterra reserves the right to control report production except in whole.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **RW9-7-94**
SAMPLE DATE: **07/29/94 17:25:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		310	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		130	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		26	1.0	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chemical Oxygen Demand		ND	25	MG/L	08/10/94	EPA410_4
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		0.39	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		310	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		0.016	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		30	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Nitrate as N, Preserved		0.98	0.050	MG/L	08/05/94	EPA353_2
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.2	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		55	5.0	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		530	10	MG/L	08/05/94	EPA160_1
Total Organic Carbon		ND	1.0	MG/L	08/09/94	EPA415_1
Total Suspended Solids		ND	10	MG/L	08/06/94	EPA160_2
Zinc by ICP		0.031	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW9-7-94**
SAMPLE DATE: **07/29/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	ND	10	Trichloroethylene	930	25
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	17	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	15	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	270	25	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	101
Bromofluorobenzene	102
1,2-Dichloroethane-D4	102

Referenced notes for these results:

Cis-1,2-Dichloroethene and Trichloroethylene are reported from a 5x dilution analyzed 08/10/94 at 20:30.

Methylene chloride laboratory contamination levels of 11-12ppb on day of analysis.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW9-7-94**
SAMPLE DATE: **07/29/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/17/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Phenol	ND	10	2,6-Dinitrotoluene	ND	10
bis(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
2-Chlorophenol	ND	10	Acenaphthene	ND	10
1,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
1,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
Benzyl alcohol	ND	20	Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
2-Methylphenol	ND	10	Diethylphthalate	ND	10
bis(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10	Fluorene	ND	10
N-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
Hexachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
Nitrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
Isophorone	ND	10	4-Bromophenyl-phenylether	ND	10
2-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
2,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
Benzoic Acid	ND	50	Phenanthrene	ND	10
bis(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
2,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
1,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
Naphthalene	ND	10	Pyrene	ND	10
4-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
Hexachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
4-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
2-Methylnaphthalene	ND	10	Chrysene	ND	10
Hexachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	ND	10
2,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
2,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
2-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
2-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
Dimethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
Acenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW9-7-94**
SAMPLE DATE: **07/29/94**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	70
2-Fluorobiphenyl	65
Terphenyl-D14	57
Phenol-D5	69
2-Fluorophenol	58
2,4,6-Tribromophenol	68

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **IT-MW-01T**
SAMPLE DATE: **08/01/94 08:50:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		330	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		170	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		43	10	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		0.25	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		330	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		0.14	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		47	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.2	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		120	50	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		680	10	MG/L	08/05/94	EPA160_1
Total Suspended Solids		31	10	MG/L	08/06/94	EPA160_2
Zinc by ICP		0.028	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **IT-MW-01T**
SAMPLE DATE: **08/01/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	ND	10	Trichloroethylene	47	5.0
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	ND	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	ND	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	ND	5.0	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	100
Bromofluorobenzene	100
1,2-Dichloroethane-D4	101

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **IT-MW-01T**
SAMPLE DATE: **08/01/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: 08/05/94
ANALYSIS DATE: 08/18/94
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Phenol	ND	10	2,6-Dinitrotoluene	ND	10
bis(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
2-Chlorophenol	ND	10	Acenaphthene	ND	10
1,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
1,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
Benzyl alcohol	ND	20	Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
2-Methylphenol	ND	10	Diethylphthalate	ND	10
bis(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10	Fluorene	ND	10
N-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
Hexachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
Nitrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
Isophorone	ND	10	4-Bromophenyl-phenylether	ND	10
2-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
2,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
Benzoic Acid	ND	50	Phenanthrene	ND	10
bis(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
2,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
1,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
Naphthalene	ND	10	Pyrene	ND	10
4-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
Hexachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
4-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
2-Methylnaphthalene	ND	10	Chrysene	ND	10
Hexachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	ND	10
2,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
2,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
2-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
2-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
Dimethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
Acenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **IT-MW-01T**
SAMPLE DATE: **08/01/94**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	63
2-Fluorobiphenyl	58
Terphenyl-D14	59
Phenol-D5	59
2-Fluorophenol	55
2,4,6-Tribromophenol	61

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

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Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **RW11-7-94**
SAMPLE DATE: **07/31/94 17:35:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		310	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		130	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		28	1.0	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chemical Oxygen Demand		67	25	MG/L	08/10/94	EPA410_4
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		0.57	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		310	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		0.020	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		20	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Nitrate as N, Preserved		1.2	0.050	MG/L	08/05/94	EPA353_2
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.2	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		41	5.0	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		440	10	MG/L	08/05/94	EPA160_1
Total Organic Carbon		ND	1.0	MG/L	08/09/94	EPA415_1
Total Suspended Solids		ND	10	MG/L	08/06/94	EPA160_2
Zinc by ICP		0.030	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW11-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	19	10	Trichloroethylene	980	25
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	17	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	32	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	300	25	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	100
Bromofluorobenzene	98
1,2-Dichloroethane-D4	100

Referenced notes for these results:

Cis-1,2-Dichloroethene and Trichloroethylene are reported from a 5x dilution analyzed 08/10/94 at 22:24.

Methylene chloride laboratory contamination levels of 11-12ppb on day of analysis.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW11-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/17/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Phenol	ND	10	2,6-Dinitrotoluene	ND	10
bis(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
2-Chlorophenol	ND	10	Acenaphthene	ND	10
1,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
1,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
Benzyl alcohol	ND	20	Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
2-Methylphenol	ND	10	Diethylphthalate	ND	10
bis(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10	Fluorene	ND	10
N-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
Hexachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
Nitrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
Isophorone	ND	10	4-Bromophenyl-phenylether	ND	10
2-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
2,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
Benzoic Acid	ND	50	Phenanthrene	ND	10
bis(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
2,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
1,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
Naphthalene	ND	10	Pyrene	ND	10
4-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
Hexachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
4-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
2-Methylnaphthalene	ND	10	Chrysene	ND	10
Hexachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	ND	10
2,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
2,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
2-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
2-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
Dimethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
Acenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW11-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	71
2-Fluorobiphenyl	66
Terphenyl-D14	69
Phenol-D5	55
2-Fluorophenol	63
2,4,6-Tribromophenol	69

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **RW10-7-94**
SAMPLE DATE: **07/31/94 15:45:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		210	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		130	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		26	1.0	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chemical Oxygen Demand		180	25	MG/L	08/10/94	EPA410_4
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		0.46	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		210	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		0.024	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		28	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Nitrate as N, Preserved		1.1	0.050	MG/L	08/05/94	EPA353_2
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.2	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		54	5.0	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		480	10	MG/L	08/05/94	EPA160_1
Total Organic Carbon		1.3	1.0	MG/L	08/09/94	EPA415_1
Total Suspended Solids		15	10	MG/L	08/06/94	EPA160_2
Zinc by ICP		0.035	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW10-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	ND	10	Trichloroethylene	800	25
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	16	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	20	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	250	25	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	100
Bromofluorobenzene	99
1,2-Dichloroethane-D4	100

Referenced notes for these results:

Cis-1,2-Dichloroethene and Trichloroethylene are reported from a 5x dilution analyzed 08/10/94 at 22:52.

Methylene chloride laboratory contamination levels of 11-12ppb on day of analysis.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW10-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/17/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
henol	ND	10	2,6-Dinitrotoluene	ND	10
is(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
-Chlorophenol	ND	10	Acenaphthene	ND	10
,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
enzyl alcohol	ND	20	Dibenzofuran	ND	10
,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
-Methylphenol	ND	10	Diethylphthalate	ND	10
is(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
-Methylphenol	ND	10	Fluorene	ND	10
-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
exachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
itrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
sophorone	ND	10	4-Bromophenyl-phenylether	ND	10
-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
enzoic Acid	ND	50	Phenanthrene	ND	10
is(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
aphthalene	ND	10	Pyrene	ND	10
-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
exachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
-Methylnaphthalene	ND	10	Chrysene	ND	10
exachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	11	10
,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
imethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
cenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW10-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	69
2-Fluorobiphenyl	66
Terphenyl-D14	61
Phenol-D5	68
2-Fluorophenol	59
2,4,6-Tribromophenol	70

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

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Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **RW12-7-94**
SAMPLE DATE: **07/31/94 19:28:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		210	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		130	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		27	2.0	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chemical Oxygen Demand		ND	25	MG/L	08/10/94	EPA410_4
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		0.58	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		210	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		0.032	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		21	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Nitrate as N, Preserved		1.3	0.050	MG/L	08/05/94	EPA353_2
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.2	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		38	10	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		380	10	MG/L	08/05/94	EPA160_1
Total Organic Carbon		ND	1.0	MG/L	08/09/94	EPA415_1
Total Suspended Solids		19	10	MG/L	08/06/94	EPA160_2
Zinc by ICP		0.044	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW12-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	18	10	Trichloroethylene	870	25
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	17	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	28	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	310	25	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	99
Bromofluorobenzene	99
1,2-Dichloroethane-D4	102

Referenced notes for these results:

Cis-1,2-Dichloroethene and Trichloroethylene are reported from a 5x dilution analyzed 08/10/94 at 23:20.

Methylene chloride laboratory contamination levels of 11-12ppb on day of analysis.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW12-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/17/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
›henol	ND	10	2,6-Dinitrotoluene	ND	10
›is(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
?-Chlorophenol	ND	10	Acenaphthene	ND	10
.,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
.,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
3enzyl alcohol	ND	20	Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
2-Methylphenol	ND	10	Diethylphthalate	ND	10
›is(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10	Fluorene	ND	10
N-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
Hexachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
Nitrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
Isophorone	ND	10	4-Bromophenyl-phenylether	ND	10
2-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
2,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
Benzoic Acid	ND	50	Phenanthrene	ND	10
bis(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
2,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
1,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
Naphthalene	ND	10	Pyrene	ND	10
4-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
Hexachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
4-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
2-Methylnaphthalene	ND	10	Chrysene	ND	10
Hexachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	ND	10
2,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
2,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
2-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
2-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
Dimethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
Acenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

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Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW12-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	69
2-Fluorobiphenyl	66
Terphenyl-D14	65
Phenol-D5	68
2-Fluorophenol	66
2,4,6-Tribromophenol	62

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW12-7-94** **MATRIX SPIKE**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **% REC**

	Result		Result
1,1-Dichloroethylene	78	Trichloroethylene	57*
		Benzene	85
		Toluene	90
		Chlorobenzene	91

Surrogates	% Recovery
Toluene-D8	99
Bromofluorobenzene	99
1,2-Dichloroethane-D4	98

Referenced notes for these results:

Recovery outside limits due to high level of Trichloroethylene in native sample.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW12-7-94** **MATRIX SPIKE**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/17/94**
UNITS: **% REC**

	Result		Result
Phenol	61	Acenaphthene	79
2-Chlorophenol	65	4-Nitrophenol	58
1,4-Dichlorobenzene	62	2,4-Dinitrotoluene	66
N-Nitroso-di-n-propylamine	99	Pentachlorophenol	72
1,2,4-Trichlorobenzene	65	Pyrene	85
4-Chloro-3-methylphenol	60		

Surrogates	% Recovery
Nitrobenzene-D5	71
2-Fluorobiphenyl	68
Terphenyl-D14	66
Phenol-D5	62
2-Fluorophenol	57
2,4,6-Tribromophenol	67

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW12-7-94 MSD**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/11/94**
FIRST ANALYSIS: **08/10/94**
UNITS: **% REC**

	Result		Result
1,1-Dichloroethylene	72	Trichloroethylene	45
		Benzene	81
		Toluene	86
		Chlorobenzene	87

Surrogates	% Recovery
Toluene-D8	101
Bromofluorobenzene	99
1,2-Dichloroethane-D4	101

Referenced notes for these results:

Recovery outside limits due to high level of Trichloroethylene in native sample.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW12-7-94 MSD**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/17/94**
UNITS: **% REC**

	Result		Result
Phenol	64	Acenaphthene	76
2-Chlorophenol	65	4-Nitrophenol	66
1,4-Dichlorobenzene	62	2,4-Dinitrotoluene	64
N-Nitroso-di-n-propylamine	94	Pentachlorophenol	77
1,2,4-Trichlorobenzene	64	Pyrene	86

Surrogates	% Recovery
Nitrobenzene-D5	70
2-Fluorobiphenyl	66
Terphenyl-D14	56
Phenol-D5	65
2-Fluorophenol	61
2,4,6-Tribromophenol	53

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **RW18-7-94**
SAMPLE DATE: **07/31/94 19:30:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		290	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		130	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		27	2.0	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chemical Oxygen Demand		ND	25	MG/L	08/10/94	EPA410_4
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		0.51	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		290	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		0.033	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		21	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Nitrate as N, Preserved		1.3	0.050	MG/L	08/05/94	EPA353_2
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.2	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		38	10	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		500	10	MG/L	08/05/94	EPA160_1
Total Organic Carbon		ND	1.0	MG/L	08/09/94	EPA415_1
Total Suspended Solids		24	10	MG/L	08/06/94	EPA160_2
Zinc by ICP		0.039	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **RW18-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/10/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	19	10	Trichloroethylene	950	25
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	15	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	27	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	330	25	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	103
Bromofluorobenzene	99
1,2-Dichloroethane-D4	102

Referenced notes for these results:

Cis-1,2-Dichloroethene and Trichloroethylene are reported from a 5x dilution analyzed 08/11/94 at 00:44.

Methylene chloride laboratory contamination levels of 11-12ppb on day of analysis.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW18-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/18/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Phenol	ND	10	2,6-Dinitrotoluene	ND	10
bis(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
2-Chlorophenol	ND	10	Acenaphthene	ND	10
1,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
1,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
Benzyl alcohol	ND	20	Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
2-Methylphenol	ND	10	Diethylphthalate	ND	10
bis(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10	Fluorene	ND	10
N-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
Hexachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
Nitrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
Isophorone	ND	10	4-Bromophenyl-phenylether	ND	10
2-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
2,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
Benzoic Acid	ND	50	Phenanthrene	ND	10
bis(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
2,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
1,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
Naphthalene	ND	10	Pyrene	ND	10
4-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
Hexachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
4-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
2-Methylnaphthalene	ND	10	Chrysene	ND	10
Hexachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	ND	10
2,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
2,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
2-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
2-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
Dimethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
Acenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **RW18-7-94**
SAMPLE DATE: **07/31/94**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	76
2-Fluorobiphenyl	70
Terphenyl-D14	65
Phenol-D5	68
2-Fluorophenol	68
2,4,6-Tribromophenol	76

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **TRIP BLANK**
SAMPLE DATE: **07/29/94**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/09/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
ethyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
ethyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
inyl chloride	ND	10	Trichloroethylene	ND	5.0
hloroethane	ND	10	Chlorodibromomethane	ND	5.0
ethylene chloride	ND	10	1,1,2-Trichloroethane	ND	5.0
cetone	ND	100	Benzene	ND	5.0
arbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
rans-1,2-Dichloroethylene	ND	5.0	2-Hexanone	ND	50
is-1,2-Dichloroethylene	ND	5.0	4-Methyl-2-pentanone	ND	50
hloroform	ND	5.0	Tetrachloroethylene	ND	5.0
,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
-Butanone	ND	100	Toluene	ND	5.0
,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
arbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
inyl acetate	ND	10	Styrene	ND	5.0
ichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	100
Bromofluorobenzene	100
1,2-Dichloroethane-D4	101

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **LAB BLANK**
SAMPLE DATE:
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Alkalinity, Titrimetric		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Silver by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Arsenic - Graphite Furnace		ND	0.010	MG/L	08/18/94	EPA7060
Barium by ICP		ND	0.20	MG/L	08/16/94	EPA6010
Calcium by ICP		ND	5.0	MG/L	08/16/94	EPA6010
Cadmium by ICP		ND	0.0050	MG/L	08/16/94	EPA6010
Chloride by Ion Chrom.		ND	1.0	MG/L	08/15/94	EPA300_0
Carbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Chemical Oxygen Demand		ND	25	MG/L	08/10/94	EPA410_4
Chromium by ICP		ND	0.010	MG/L	08/16/94	EPA6010
Copper by ICP		ND	0.025	MG/L	08/16/94	EPA6010
Iron by ICP		ND	0.10	MG/L	08/16/94	EPA6010
Bicarbonate		ND	10	MG/L AS CACO3	08/09/94	EPA310_1
Manganese by ICP		ND	0.015	MG/L	08/16/94	EPA6010
Sodium by ICP		ND	5.0	MG/L	08/16/94	EPA6010
Nickel by ICP		ND	0.040	MG/L	08/16/94	EPA6010
Nitrate as N, Preserved		ND	0.050	MG/L	08/05/94	EPA353_2
Lead - Graphite Furnace		ND	0.0030	MG/L	08/18/94	EPA7421
Settleable Solids		ND	0.1	ML/L	08/04/94	SM209EA
Selenium -Graphite Furnace		ND	0.0050	MG/L	08/18/94	EPA7740
Sulfate by Ion Chrom.		ND	5.0	MG/L	08/15/94	EPA300_0
Total Dissolved Solids		N/A		MG/L	08/05/94	EPA160_1
Total Organic Carbon		ND	1.0	MG/L	08/09/94	EPA415_1
Total Suspended Solids		N/A		MG/L	08/05/94	EPA160_2
Zinc by ICP		ND	0.020	MG/L	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **Hazardous Substance Vols.**
METHOD REFERENCE: **EPA8240**

SAMPLE ID: **LAB BLANK**
SAMPLE DATE: **not spec**
SAMPLE MATRIX: **WATER**
ANALYSIS DATE: **08/09/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Methyl chloride	ND	10	1,2-Dichloropropane	ND	5.0
Methyl bromide	ND	5.0	trans-1,3-Dichloropropene	ND	5.0
Vinyl chloride	ND	10	Trichloroethylene	ND	5.0
Chloroethane	ND	10	Chlorodibromomethane	ND	5.0
Methylene chloride	ND	10	1,1,2-Trichloroethane	ND	5.0
Acetone	ND	100	Benzene	ND	5.0
Carbon disulfide	ND	5.0	cis-1,3-Dichloropropene	ND	5.0
1,1-Dichloroethylene	ND	5.0	2-Chloroethylvinyl ether	ND	10
1,1-Dichloroethane	ND	5.0	Bromoform	ND	5.0
trans-1,2-Dichloroethylene	ND	5.0	2-Hexanone	ND	50
cis-1,2-Dichloroethylene	ND	5.0	4-Methyl-2-pentanone	ND	50
Chloroform	ND	5.0	Tetrachloroethylene	ND	5.0
1,2-Dichloroethane	ND	5.0	1,1,2,2-Tetrachloroethane	ND	5.0
2-Butanone	ND	100	Toluene	ND	5.0
1,1,1-Trichloroethane	ND	5.0	Chlorobenzene	ND	5.0
Carbon tetrachloride	ND	5.0	Ethylbenzene	ND	5.0
Vinyl acetate	ND	10	Styrene	ND	5.0
Dichlorobromomethane	ND	5.0	Xylenes, total	ND	5.0

Surrogates	% Recovery
Toluene-D8	97
Bromofluorobenzene	102
1,2-Dichloroethane-D4	101

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **LAB BLANK**
SAMPLE DATE: **not spec**
SAMPLE MATRIX: **WATER**
EXTRACTION DATE: **08/05/94**
ANALYSIS DATE: **08/18/94**
UNITS: **UG/L**

	Result	Reporting Limit		Result	Reporting Limit
Phenol	ND	10	2,6-Dinitrotoluene	ND	10
bis(2-Chloroethyl)ether	ND	10	3-Nitroaniline	ND	50
2-Chlorophenol	ND	10	Acenaphthene	ND	10
1,3-Dichlorobenzene	ND	10	2,4-Dinitrophenol	ND	50
1,4-Dichlorobenzene	ND	10	4-Nitrophenol	ND	50
Benzyl alcohol	ND	20	Dibenzofuran	ND	10
1,2-Dichlorobenzene	ND	10	2,4-Dinitrotoluene	ND	10
2-Methylphenol	ND	10	Diethylphthalate	ND	10
bis(2-Chloroisopropyl)ether	ND	10	4-Chlorophenyl-phenylether	ND	10
4-Methylphenol	ND	10	Fluorene	ND	10
N-Nitroso-di-n-propylamine	ND	10	4-Nitroaniline	ND	50
Hexachloroethane	ND	10	4,6-Dinitro-2-methylphenol	ND	50
Nitrobenzene	ND	10	N-Nitrosodiphenylamine (1)	ND	10
Isophorone	ND	10	4-Bromophenyl-phenylether	ND	10
2-Nitrophenol	ND	10	Hexachlorobenzene	ND	10
2,4-Dimethylphenol	ND	10	Pentachlorophenol	ND	50
Benzoic Acid	ND	50	Phenanthrene	ND	10
bis(2-Chloroethoxy)methane	ND	10	Anthracene	ND	10
2,4-Dichlorophenol	ND	10	Di-n-butylphthalate	ND	10
1,2,4-Trichlorobenzene	ND	10	Fluoranthene	ND	10
Naphthalene	ND	10	Pyrene	ND	10
4-Chloroaniline	ND	20	Butylbenzylphthalate	ND	10
Hexachlorobutadiene	ND	10	3,3'-Dichlorobenzidine	ND	20
4-Chloro-3-methylphenol	ND	20	Benzo(a)anthracene	ND	10
2-Methylnaphthalene	ND	10	Chrysene	ND	10
Hexachlorocyclopentadiene	ND	10	bis(2-Ethylhexyl)phthalate	10	10
2,4,6-Trichlorophenol	ND	10	Di-n-octylphthalate	ND	10
2,4,5-Trichlorophenol	ND	10	Benzo(b)fluoranthene	ND	10
2-Chloronaphthalene	ND	10	Benzo(k)fluoranthene	ND	10
2-Nitroaniline	ND	50	Benzo(a)pyrene	ND	10
Dimethylphthalate	ND	10	Indeno(1,2,3-cd)pyrene	ND	10
Acenaphthylene	ND	10	Dibenzo(a,h)anthracene	ND	10
			Benzo(g,h,i)perylene	ND	10

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME: **ABN HSL GC/MS Extractables**
METHOD REFERENCE: **EPA8270**

SAMPLE ID: **LAB BLANK**
SAMPLE DATE: **not spec**
SAMPLE MATRIX: **WATER**

Surrogates	% Recovery
Nitrobenzene-D5	71
2-Fluorobiphenyl	64
Terphenyl-D14	83
Phenol-D5	68
2-Fluorophenol	56
2,4,6-Tribromophenol	61

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **RW9-7-94** **MATRIX SPIKE**
SAMPLE DATE: **07/29/94 17:25:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Silver by ICP		90	0.010	% REC	08/16/94	EPA6010
Barium by ICP		109	0.20	% REC	08/16/94	EPA6010
Calcium by ICP		116	5.0	% REC	08/16/94	EPA6010
Cadmium by ICP		91	0.0050	% REC	08/16/94	EPA6010
Chromium by ICP		93	0.010	% REC	08/16/94	EPA6010
Copper by ICP		93	0.025	% REC	08/16/94	EPA6010
Iron by ICP		99	0.10	% REC	08/16/94	EPA6010
Manganese by ICP		90	0.015	% REC	08/16/94	EPA6010
Sodium by ICP		101	5.0	% REC	08/16/94	EPA6010
Nickel by ICP		89	0.040	% REC	08/16/94	EPA6010
Zinc by ICP		92	0.020	% REC	08/16/94	EPA6010

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

SAMPLE ID: **IT-MW-01T** **MATRIX SPIKE**
SAMPLE DATE: **08/01/94 08:50:00**
SAMPLE MATRIX: **WATER**

Test Name	Note Ref	Result	Reporting Limit	Units	Date Analyzed	Method Reference
Arsenic - Graphite Furnace		87		% REC	08/18/94	EPA7060
Lead - Graphite Furnace		108		% REC	08/18/94	EPA7421
Selenium -Graphite Furnace		117		% REC	08/18/94	EPA7740

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

Referenced notes for this work order:

B408024

Batch MSD % recovery was outside QC limits for calcium analysis due to the high native sample concentration. The MS/MSD % RPD and LCS/LCSD were within acceptable limits.

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Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME **Alkalinity, Titrimetric** TEST CODE **310_1**

Alkalinity	EPA 310.1 - USEPA Methods for Chemical Analysis of Water and Wastes. Titrimetric with sulfuric acid.

TEST NAME **ICP Metals** TEST CODE **6010**

Metals by ICP	Inductively coupled emission spectroscopy according to Method 6010, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-846, Third Edition.

TEST NAME **Hazardous Substance Vols.** TEST CODE **8240**

Hazardous Substance List Volatiles	Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME **ABN HSL GC/MS Extractables** TEST CODE **8270**

Hazardous Substance List Extractables	Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME **Arsenic - Graphite Furnace** TEST CODE **AS_GF**

Arsenic Graphite Furnace	Method 7060, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. EPA 206.2- Methods for Chemical Analysis of Water and Waste.

TEST NAME **Chloride by Ion Chrom.** TEST CODE **CL_IC**

Chloride	USEPA 300.0 - The Determination of Inorganic Anions in Water by Ion Chromatography.

TEST NAME **Carbonate** TEST CODE **CO3_A**

Carbonate	EPA 310.1 - USEPA Methods for Chemical Analysis of Water

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME **Carbonate** TEST CODE **CO3_A**

and Wastes. Titrimetric analysis of alkalinity and and calculation of carbonate content.

TEST NAME **Chemical Oxygen Demand** TEST CODE **COD**

COD	EPA 410.4 - Chemical Analysis of Water and Wastewater. Colorimetric analysis for Chemical Oxygen Demand.

TEST NAME **Bicarbonate** TEST CODE **HCO3_A**

Bicarbonate	EPA 310.1 - Methods for Chemical Analysis of Water and Wastes, USEPA 1983. Titrimetric with sulfuric acid for alkalinity and calculation of bicarbonate content.

TEST NAME **Nitrate as N, Preserved** TEST CODE **NO3_PR**

Nitrate	Method 353.2-Chemical Analysis of Water and Wastewater. Colorimetric Automated Cadmium Reduction method using Lachat autoanalyzer for NO3 or NO2 as N. This analysis is performed on a preserved liquid sample.

TEST NAME **Lead - Graphite Furnace** TEST CODE **PB_GF**

Lead Graphite Furnace	USEPA 7421, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. USEPA 239.2- Methods for Chemical Analysis of Water and Wastes.

TEST NAME **Selenium -Graphite Furnace** TEST CODE **SE_GF**

Selenium Graphite Furnace	Method 7740, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. USEPA 270.2- Methods for Chemical Analysis of Water and Wastes.

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Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME **Sulfate by Ion Chrom.** TEST CODE **SO4_IC**

Sulfate	USEPA Method 300.0 - The Determination of Inorganic Anions in Water by Ion Chromatography.

TEST NAME **Total Dissolved Solids** TEST CODE **TDS**

Total Dissolved Solids	USEPA Method 160.1- Methods for Chemical Analysis of Water and Wastes. Gravimetric analysis.

TEST NAME **Total Organic Carbon** TEST CODE **TOC**

Total Organic Carbon	USEPA Method 415.1- Methods for Chemical Analysis of Water and Wastes. Chemical oxidation and nondispersive infrared analysis. Equivalent to SW-846 Method 9060. Sample prep is instrument manufacturer specific.

TEST NAME **Total Suspended Solids** TEST CODE **TSS**

Total Suspended Solids	Method 160.2-Chemical Analysis of Water and Wastewater. Filtration and gravimetric analysis of non-filterable residue.

TEST NAME **ICPES Digestion - Water** TEST CODE **Z3010**

Water Digestion	Method 3010A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of aqueous samples, EP Toxicity and TCLP extracts, and wastes that contain suspended solids for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure determines total metals.

TEST NAME **GFAA Digestion - Water** TEST CODE **Z3020**

Water Digestion	Method 3020, SW-846, Test Methods for Evaluating Solid

Quanterra Environmental Services

Company: IT CORPORATION
Date: 09/22/94
Client Work ID: CARSWELL PHASE III 305895

Work Order: B4-08-024

TEST NAME **GFAA Digestion - Water** TEST CODE **Z3020**

Waste, Third Edition. Acid digestion technique for Graphite Furnace. Equivalent to Method 3020A, SW846.

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 407508
Page 1 of 2

Project Name/No. [1] Caldwell Pipeline III
Sample Team Members [2] R Luce
Profit Center No. [3] 3513
Project Manager [4] Victor Pozzi
Purchase Order No. [6]
Required Report Date [11] 15 Day T-O-T

Samples Shipment Date [7] 8/1/94
Lab Destination [8] Quanterra / Alston
Lab Contact [9] Elaine Deane
Project Contact/Phone [12] Rick Luce
Carrier/Waybill No. [13] 1204849343

Bill to: [5] Victor Pozzi IT. PITT
Report to: [10] Rick Luce IT / PITT

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

	Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
5	RW12-7-94	WATER	7/31 1928	2.5L	2.5L	None	SU 8270	Good on 8-2-94	
2	IT-MW-01T		8/1 0850	2.5L	2.5L	None	SU 8270		
1	RW9-7-94	\	7/29 1725	2.5L	2.5L	None	SU 8270		
7	RW18-7-94		7/31 1930	2.5L	2.5L	None	SU 8270		
6	RW12-7-94MS/MSD		7/31 1928	2.5L	2.5L	None	SU 8270		
1	MW9-7-94	\	7/29 1725	2 40ml	50ml	HCL	VOA 8240		B3 3370 08X
2	IT-MW-01T		8/1 0850	2 40ml	50ml	HCL	VOA 8240		"
3	RW11-7-94		7/31 1735	2 40ml	50ml	HCL	VOA 8240		"

Special Instructions: [23] TCE levels are elevated (~5000 PPB possible)

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation) Rick Luce / IT Sample	Date: 8/1/94 Time: 1625 Hrs	1. Received by [28] (Signature/Affiliation) [illegible] QT	Date: 8-2-94 Time: 0730
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

*See back of form for special instructions

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 407528

Page 2 of 2

Project Name Caldwell - Phase III

Project No. 305855

Samples Shipment Date 8/1/94

ONE CONTAINER PER LINE

	Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
4	RW 10-7-94	Water	7/31 1545	2-40ml	80ml	HCL	VOA 8240	Good Cond. 8-2-94	B3 3370406
5	RW 12-7-94		7/31 1628	2-40ml	80ml	HCL	VOA 8240		"
7	RW 15-7-94		7/31 1430	2-40ml	80ml	HCL	VOA 8240		"
6	RW 12-7-94 MS/MSD		7/31 1628	2-40ml	80ml	HCL	VOA 8240		"
8	TRIPBLANK 7-94		7/29 1200	1-40ml	40ml	HCL	VOA 8240		"

Relinquished by: ITT 8/1/94

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 407509
Page 1 of 2

Project Name/No. [1] Caldwell-SC Phase III
Sample Team Members [2] R Lice
Profit Center No. [3] 3513
Project Manager [4] Victor Dozzi
Purchase Order No. [6]
Required Report Date [11] 15 Day

Samples Shipment Date [7] 8/1/94
Lab Destination [8] Gomtech/Austin
Lab Contact [9] Klaiber Deane
Project Contact/Phone [12] Rick Lice
Carrier/Waybill No. [13] Fed Ex 1704649343

Bill to: [5] Victor Dozzi
Report to: [10] Rick Lice IT Pit

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
3 RW11-7-94	WATER	7/31 1735	2.5L	2.5L	None	SW8270	Good 1°C	
4 RW10-7-94		7/31 1545	2.5L	2.5L	None	SW8270		
5 RW12-7-94		7/31 1928	1L	1L	None	Gen Chem		
1 RW15-7-94		7/31 1930	1L	1L	None	Gen Chem		
2 RW9-7-94		7/29 1725	1L	1L	None	Gen Chem		
6 INF-946		8/1 1100	1L	1L	None	Gen Chem		
2 FI-MW-01T		8/1 0800	1L	1L	None	Gen Chem		
4 RW10-7-94		7/31 1545	1L	1L	None	Gen Chem		

Special Instructions: [23]

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation) Rick Lice / IT	Date: 8/1/94 Time: 1713	1. Received by [28] (Signature/Affiliation) [illegible] CXF	Date: 8-2-94 Time: 0933
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 402524

Page 2 of 2

Project Name Carswell - Pinnell

Project No.

Samples Shipment Date 8/1/94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
3 RW11-7-94	Lunker	7/31 1735	1L	1L	None	GENCHEM	Good	
1 RW 9-7-94		7/29 1225	250ml	250ml	H2SO4	COD/TOC		
3 RW 11-7-94		7/31 1735	250ml	250ml	H2SO4	COD/TOC		
4 RW10-7-94		7/31 1545	250ml	250ml	H2SO4	NITRATE		
4 RW10-7-94		7/31 1545	250ml	250ml	H2SO4	COD/TOC		
7 RW18-7-94		7/31 1530	250ml	250ml	H2SO4	COD/TOC		
7 RW18-7-94		7/31 1530	250ml	250ml	H2SO4	NITRATE		
5 RW12-7-94		7/31 1528	250ml	250ml	H2SO4	COD/TOC		
3 RW11-7-94		7/31 1735	250ml	250ml	H2SO4	NITRATE		
5 RW12-7-94		7/31 1528	250ml	250ml	H2SO4	NITRATE		
1 RW 9-7-94		7/29 1225	250ml	250ml	H2SO4	NITRATE		

D. Allen 8/1/94

White: To accompany samples
Yellow: Field copy

*See back of form for special instructions.

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 406810
Page 1 of ____

Project Name/No. [1] CARSWELL PHASE III / 308815
Sample Team Members [2] R. WILC
Profit Center No. [3] 3513
Project Manager [4] VICTOR DUZZI
Purchase Order No. [6]
Required Report Date [11] 15 DAY T-OT

Samples Shipment Date [7] AUG 1, 1994
Lab Destination [8] QUANTERRA / AUSTIN
Lab Contact [9]
Project Contact/Phone [12] RICK WILC 412 858
Carrier/Waybill No. [13] FED EX 1204849343

Bill to: [5] VICTOR DUZZI
IT - PITTSBURGH

Report to: [10] RICK WILC
IT PITTSBURGH

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

	Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
1	RW9-7-94	WATER	7/29 1735	SOIL	SOIL	HNO_3	METALS	Good / 5.2.91	
3	RW11-7-94 ~~RW9-7-94~~		7/31 1735	SOIL	SOIL	HNO_3	METALS		
4	RW10-7-94 ~~RW11-7-94~~		7/31 1545	SOIL	SOIL	HNO_3	METALS		
4	RW12-7-94 ~~RW10-7-94~~		7/31 1928	1L	1L	HNO_3	METALS		
2	IT-MW-01T ~~RW12-7-94~~		8/1 0850	1L	1L	HNO_3	METALS		
4	RW12-7-94MS ~~RW12-7-94~~		7/31 1928	1L	1L	HNO_3	METALS		
2	RW18-7-94		7/31 1930	1L	1L	HNO_3	METALS		
5	INF-S-94 MW		8/1 1100	1L	1L	HNO_3	METALS		

Special Instructions: [23] ~~VOA may have hi conc TCE~~

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: [25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required: [26]
Normal ☐ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by [28] (Signature/Affiliation) Richard B Wilc / IT	Date: 8/1/94 Time: Aug 1 1645	1. Received by [28] (Signature/Affiliation) [signature]	Date: 8-2-94 Time: 0832
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]
1L jars used since not enough 500ml jars were sent

*See back of form for special instructions

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FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE

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FINAL PAGE

ADMINISTRATIVE RECORD

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