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SIGNIFICANCE OF CONTAMINATION REPORT
WRIGHT ARMY AIRFIELD FIRE TRAINING AREA
FORT STEWART
SAVANNAH, GEORGIA

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
Kansas City, Missouri

Prepared by:

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ESE No. 3-91-2015G

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LIST OF ACRONYMS

AAFTA	Army Airfield Fire Training Area
ARAR	applicable or relevant and appropriate requirements
ASTM	American Society for Testing and Materials
CDAP	Chemical Data Acquisition Plan
CFR	Code of Federal Regulations
cm/sec	centimeters per second
CME	Central Mine Equipment
CSF	cancer slope factor
°	degree
°C	degrees Celsius
COC	chemical of concern
°F	degrees Fahrenheit
DI	deionized
DNR	Department of Natural Resources
DOT	U.S. Department of Transportation
EMC	EMC Engineering Services, Inc.
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science & Engineering, Inc.
FCT	final cleanup target
FID	flame ionization detector
ft	feet
ft^2	square foot
ft-bls	feet below land surface
ft/day	feet per day
ft/ft	feet per foot
ft/yr	feet per year

LIST OF ACRONYMS
(Continued, Page 2 of 3)

gal	gallon
gpd	gallons per day
ID	inside diameter
MCL	maximum contaminant level
mgd	million gallons per day
mg/kg	milligrams per kilogram
mL	milliliter
MRD	Missouri River District
NGVD	National Geodetic Vertical Datum of 1929
PAH	polynuclear aromatic hydrocarbon
PCT	preliminary cleanup target
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
SC	clayey sand
SM	silty sand
SOW	scope of work
SSHP	site safety and health plan
SVOC	semivolatile organic compounds
TOV	total organic vapors
μg/L	micrograms per liter
U.S. 82	U.S. Highway 82
USACE	U.S. Army Corps of Engineers

LIST OF ACRONYMS
(Continued, Page 3 of 3)

USAEHA	U.S. Army Environmental Hygiene Agency
USAF	U.S. Air Force
USCS	Unified Soil Classification System
VOA	volatile organic analyte
VOC	volatile organic compound
WP	work plan

1.0 INTRODUCTION

Environmental Science & Engineering, Inc. (ESE) was contracted by the U.S. Army Corps of Engineers (USACE) to perform sampling activities and to present a significance of contamination report for the Wright Army Airfield Fire Training Area (AAFTA) at Fort Stewart, near Savannah, Georgia, as part of the site closure plan. The work performed at the site was designed to define the extent of contamination in the groundwater, sediments, and soil, define background levels of the contaminants, and compare the contaminants to federal and State of Georgia criteria.

This report has been prepared at the request of the Kansas City District, USACE, under Contract No. DACW41-87-D-0151. The activities performed during individual field activities at the Fort Stewart site are defined in this report. The project consisted of the following major tasks:

1. Prefield activities,
2. Preliminary hydrogeologic characterization,
3. Soil sampling,
4. Monitor well installation and groundwater sampling,
5. Sediment sampling, and
6. Report preparation.

The remainder of Section 1.0 presents the general site background for the Fort Stewart fire training areas. Section 2.0 presents a detailed description of specific procedures for each task. Section 3.0 presents the analytical results. Section 4.0 includes a description of the comparison of contaminant concentrations and state and federal guidelines. Section 5.0 presents conclusions and recommendations.

1.1 SITE BACKGROUND

1.1.1 LOCATION AND DESCRIPTION

Wright Army Airfield is located in Liberty County, Georgia, near the southern entrance to Fort Stewart Military Reservation, approximately 1.5 miles from the community of Hinesville and 41 miles southwest of Savannah (Figure 1-1). The main access to the south entrance of Fort Stewart and Wright Army Airfield is from U.S. Highway 82 (U.S. 82). The Wright AAFTA is a 5,000-square-foot (ft^2) concrete pad located on the northwest periphery of the airfield, approximately 3,100 feet (ft) northwest of the control tower (Figures 1-2 and 1-3).

1.1.2 SITE HISTORY

Fort Stewart, named in honor of the Revolutionary War General Daniel Stewart, was established in June 1940 as an antiaircraft artillery training center. Between January and September 1945, the installation operated a prisoner-of-war camp which housed two Italian units. The post was deactivated in September 1945.

In August 1950, Fort Stewart was reactivated to train antiaircraft artillery units for the Korean Conflict and was expanded to include armor training in 1953. Fort Stewart was designated a permanent Army installation in 1956.

The post became a flight training center in 1966, and Hunter AAF was acquired from the U.S. Air Force (USAF) in 1967 to support the increased need for helicopter pilot training during the Vietnam Conflict. Aviation training at the Fort Stewart facilities was phased out in 1973.

The 1st Battalion, 75th Infantry was activated on January 31, 1974, and Fort Stewart became a training and maneuver area providing tank, field artillery, helicopter gunnery, and small arms training for regular Army and National Guard

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Figure 1-1
FORT STEWART LOCATION MAP

SOURCE: ESE.

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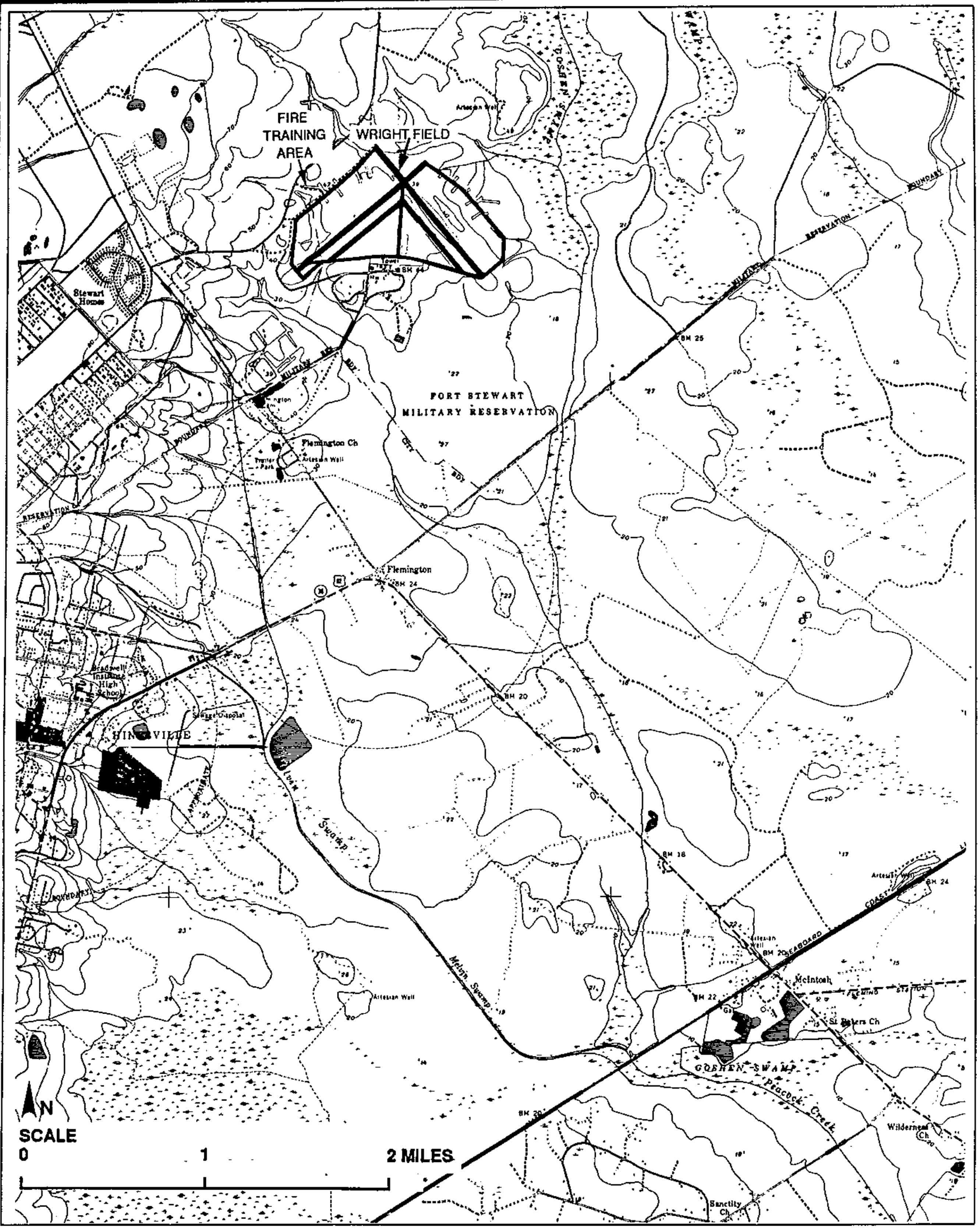

Figure 1-2
SITE MAP AND SURFACE
WATER FEATURES - WRIGHT AAFTA

SOURCE: USGS, 1973.

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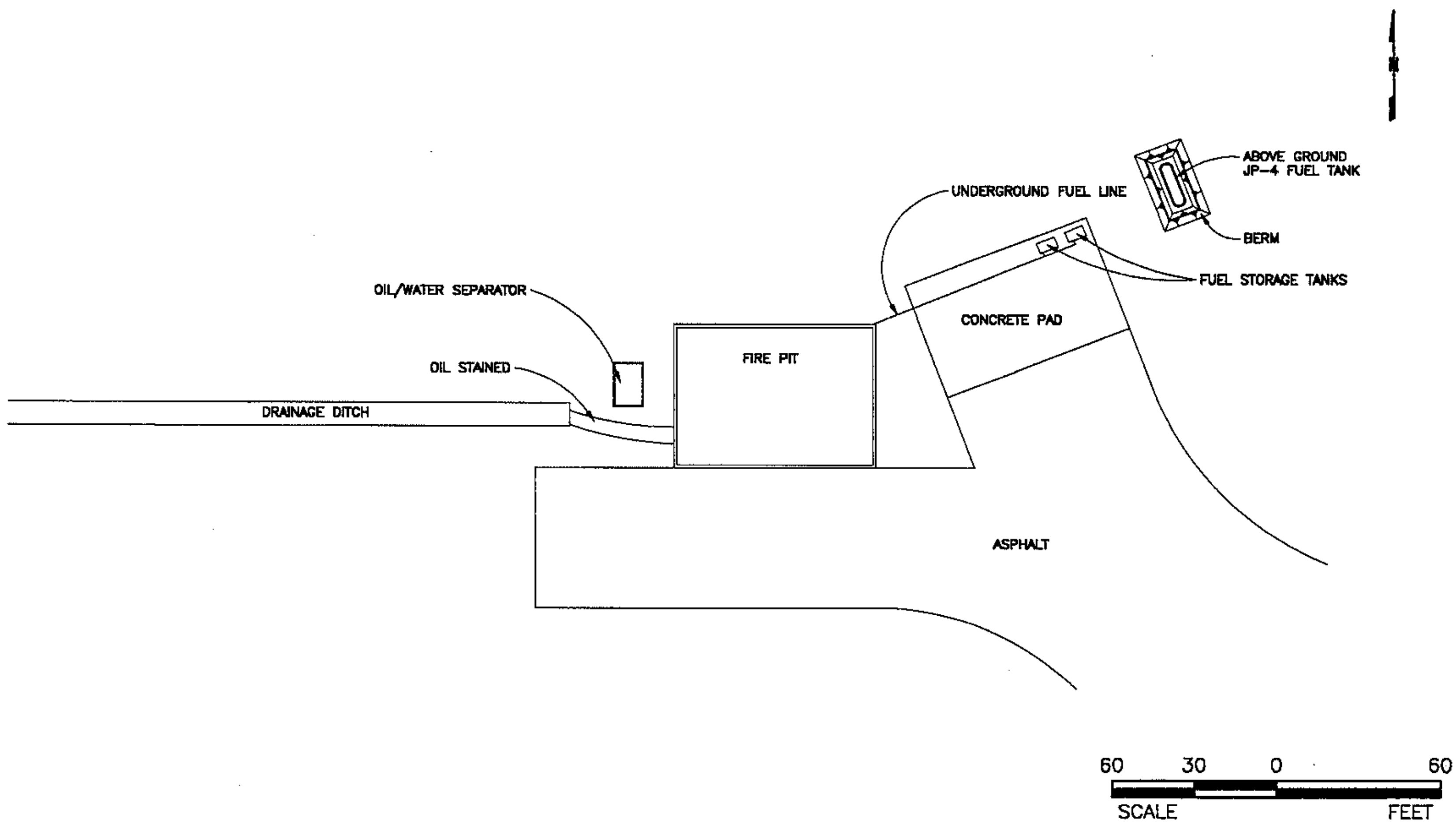

Figure 1-3
SITE LAYOUT
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1991

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units. The 24th Infantry Division was permanently stationed at Fort Stewart in 1975. The Fort Stewart 24th Infantry Division was active during the Persian Gulf war crisis in 1991.

1.1.3 PHYSIOGRAPHY, TOPOGRAPHY, AND SURFACE WATER

The study area is located within the Southern Atlantic Coastal Plain Physiographic Province. Most of the land within Fort Stewart is flat, planted pine woods interfingered with freshwater swamps and tidal creeks with elevations ranging from 10 to nearly 100 ft-mean sea level (ft-msl). However, the northwestern portion of the reservation is characterized by rolling hills that rise to an elevation of approximately 180 ft-msl.

The Wright AAFTA is at an elevation of approximately 45 ft-msl. The ground surface slopes gently to the southeast and drains by natural intermittent stream channels into Goshen Swamp, the headwaters of Peacock Creek. Peacock Creek runs to the southeast and joins the tidally influenced North Newport River (Figure 1-2).

1.1.4 GEOLOGY

The coastal plain region of Georgia is underlain by a thick wedge of unconsolidated and semiconsolidated sediments that range in age from Recent to Cretaceous (Herrick and Vorhis, 1963). This sedimentary wedge thickens and slopes toward the east with a dip of less than 1 degree (°). Underlying these sediments in the Savannah area is a basement of crystalline igneous rocks of the Piedmont Formation, and various metamorphic and consolidated sedimentary rocks of Triassic to Precambrian age.

The formations that comprise the primary artesian and shallow sand aquifers beneath the study site extend to a depth of approximately 850 ft. The units range in age from Middle Eocene to Recent. Figure 1-4 is a composite geologic column for the Savannah area.

Deep borings performed during previous investigations [ESE, 1982; U.S. Army Environmental Hygiene Agency (USAEHA), 1987] at or in the vicinity of Wright AAFTA indicate that the area is underlain predominantly by sand, silty-sand, and lesser clayey sand to a depth of at least 100 ft. Shallow borings performed during previous investigations (USAEHA, 1987 and ESE, 1990) at the Wright AAFTA indicate that the site is underlain predominantly by fine-grained sand deposits to a depth of at least 10 ft. The boring for deep well WMW-7, installed for the current study, encountered predominantly silty and clayey sand to 12 ft, then clean sand to 17 ft, then dense silty sand to 55 ft (total depth).

1.1.5 HYDROGEOLOGY

The two principal aquifer systems in the Georgia coastal plain are the artesian Floridan aquifer and the overlying surficial aquifer (water-table aquifer). The Floridan aquifer is comprised of Middle-Upper Eocene (Ocala Group) and Oligocene (undifferentiated) limestones. The overlying Lower-Miocene Tampa Limestone, which may include beds of sandy clay, may also form part of the Floridan aquifer. In the Savannah area, the top of the Floridan is approximately 200 feet below land surface (ft-bls).

The Middle and Upper-Miocene Hawthorn Group and Duplin Marl, comprised of clay with occasional limestone beds, forms a confining unit that hydraulically separates the Floridan aquifer from the overlying surficial aquifer. The Duplin Marl may have been encountered in WMW-7 at a depth of 17 ft-bls, based on soil descriptions.

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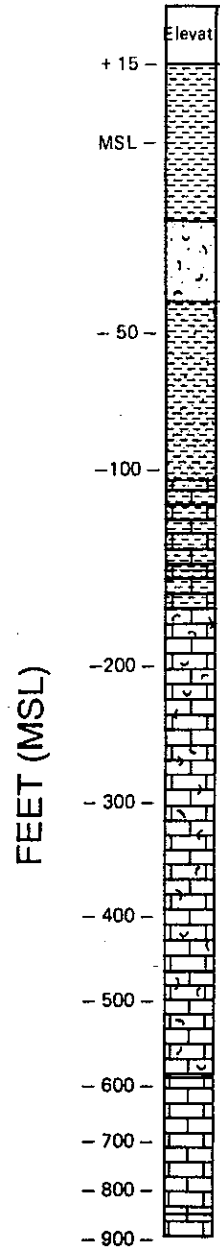
COMPOSITE GEOLOGIC COLUMN



System	Series	Geologic Unit	Lithologic Description
QUATERNARY		Spoil	Sand, silt, clay, mixed, brown
QUATERNARY	Recent	Alluvium	Clay, soft, wet, highly organic, dark brown
QUATERNARY	Pleistocene	Undifferen-tiated Sands	Sand, medium grained, fossiliferous
TERTIARY	Upper Miocene	Duplin Marl	Clay, sandy, stiff, phosphatic, green, occasionally calcareous
TERTIARY	Middle Miocene	Hawthorn Formation	Clay and dolomitic limestone interbedded, phosphatic, sandy, green to buff
TERTIARY	Lower Miocene	Tampa Lime-stone Equiv.	Limestone, dolomitic with seams of green sandy clay, conglomeritic at base
TERTIARY	Oligocene	Undifferen tiated Rocks	Limestone, soft, fossiliferous, gray to buff
TERTIARY	Upper Eocene	Ocala Limestone	Limestone, soft to dense, granular fossiliferous, white to buff with lenses of bluish re-crystallized limestone glauconitic at base
TERTIARY	Middle Eocene	Gosport Sand	Limestone, sandy, fossiliferous, dense, white to gray
TERTIARY	Middle Eocene	Lisbon Formation	Limestone, soft, glauconitic, dolomitic, marly, white to buff
TERTIARY		Pre-Lisbon Rocks	

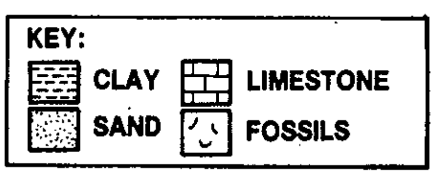


Figure 1-4
COMPOSITE GEOLOGIC COLUMN

SOURCE: HERRICK AND VORHIS, 1963.

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The Pleistocene to Recent deposits above the Miocene deposits consist of discontinuous units of sand, silt, and clay. The surficial aquifer is comprised of discontinuous beds and lenses of sand within these deposits. The depth to the water table in the Savannah area is approximately 3 to 10 ft-bls.

Previous borings performed at Wright AAFTA encountered the water table of the surficial aquifer at a depth of 8 ft. The aquifer may extend to approximately 100 ft-bls as indicated by borings performed at a landfill a few miles northwest of Wright AAFTA (ESE, 1982). These borings encountered continuous sandy deposits to a depth of 100 ft. Kundell (1978) reports that the surficial aquifer may be up to 120 ft thick.

The Floridan aquifer is the major source of groundwater for the Coastal Plain of Georgia and adjoining states (Krause and Gregg, 1972). The Floridan aquifer in Georgia provides the majority of water for industrial and domestic use [500 million gallons per day (mgd) statewide in 1978]. There is no record of extended usage of the surficial aquifer in the study area; however, statewide usage amounted to 500,000 gallons per day (gpd) in 1978.

1.1.6 CLIMATE

The study area has a moist and temperate climate year round. Average temperatures range from 52 degrees Fahrenheit (°F) in winter to 80°F in summer. Average annual rainfall is approximately 48 inches (Headquarters, 24th Infantry Division, 1977), 60 percent of which usually falls during the period April through September. Prolonged drought is rare in the study area.

Climatic data for the period of July through December 1991 are presented in Appendix A. The data include the minimum and maximum temperature, daily mean temperature, total precipitation water equivalent, and maximum windspeed and direction.

1.1.7 PREVIOUS SITE INVESTIGATIONS

An environmental study was completed by ESE at Fort Stewart in 1982. The study was performed to generate environmental data and to provide construction planning to bring the three sanitary landfills at Fort Stewart Military Reservation into compliance with the Resource Conservation and Recovery Act (RCRA) and with regulations of the State of Georgia Department of Natural Resources (DNR). The study included soil borings, monitor well installation, groundwater and surface water sampling, and aquifer testing (slug tests). The monitor wells installed at the South Central Landfill site during this study are the closest of these wells to the current study area and are approximately 6 miles to the west.

A preliminary contamination assessment was performed by USAEHA in March 1987 and is included as Appendix B to this report. This Hazardous Waste Study (No. 37-26-0127-88) was performed to evaluate the existence of contamination in the soils and pit residues at three fire training areas and four explosive ordnance disposal sites at Fort Stewart. The 1987 USAEHA study at the Wright AAFTA included the drilling, logging, and sampling of four exploratory borings and the pit residue (Figure 1-5). Five metals (lead, mercury, barium, chromium, and arsenic) were found in almost every sample at low to moderate levels. One soil sample and the pit residue sample contained elevated levels of polynuclear aromatic hydrocarbons (PAHs) and bis(2-ethylhexyl)phthalate (Table 1-1).

During February 1990, Hunter/ESE performed the first phase of a contamination evaluation at the Wright AAFTA. The scope of work included soil gas analyses,

Table 1-1. Analytical Parameters Detected in Soil Samples in 1987

PARAMETERS	UNITS	BH-1			BH-2		BH-3		BH-4	
		0-1 FT.	4-5 FT.	9-10 FT.	0-1 FT.	7.5-8.5 FT.	0-1 FT.	7.5-8.5 FT.	0-1 FT.	7.5-8.5 FT.
ARSENIC	UG/G	3.98	15.70	16.00	3.90	1.99	2.00	3.94	3.92	9.86
BARIUM	UG/G	15.50	12.00	15.40	12.50	7.77	13.60	3.74	5.88	4.34
BENZO(A)ANTHRACENE	UG/KG	<1.00	<1.00	2000.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
BENZO(A)PYRENE	UG/KG	<1.00	<1.00	1108.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	<1.00	<1.00	2500.00	<1.00	<1.00	200.00	<1.00	<1.00	<1.00
CD	UG/G	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98	<1.98
CHROMIUM	UG/G	4.57	17.50	13.40	5.27	4.58	<3.96	4.13	7.06	8.88
FLUORANTHENE	UG/KG	<1.00	<1.00	5100.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
INDENO(1-2-3-CD)PYRENE	UG/KG	<2.50	<2.50	500.00	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
LEAD	UG/G	33.80	82.40	42.00	82.00	43.80	31.90	25.60	608.00	60.70
MERCURY	UG/G	0.39	0.39	0.40	0.39	0.39	0.39	0.39	0.39	0.39
PHENANTHRENE	UG/KG	<1.00	<1.00	1700.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
SE	UG/G	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
SILVER	UG/G	<3.99	<3.99	<3.99	<3.99	<3.99	<3.99	<3.99	<3.99	<3.99

Source: ESE.

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soil sampling and analyses, installation of three monitor wells, and groundwater sampling and analyses (Hunter/ESE, 1990).

Twelve soil gas probes (pneumometers) were installed around the fire training area in the 1990 study. Gas samples were extracted from the pneumometers and were analyzed for Total Organic Vapors (TOV) using a Model OVA-128 Flame Ionization Detector (FID). The TOV readings measured with the FID were between 0 and 30 parts per million (ppm). The highest readings were found at the southeast corner of the fire training pit and on the north side of the drainage ditch located approximately 40 ft from the eastern edge of the pit.

Analytical samples were collected from four soil borings at Wright AAFTA for the 1990 investigation (Figure 1-5). These samples were analyzed for inorganic compounds, volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs). The results indicated five metals (arsenic, barium, chromium, lead, and selenium) and two VOCs (methylene chloride and toluene) are present in the soils at the Wright AAFTA (Appendix J). PAHs were not found in the soil samples.

Groundwater was sampled from three monitor wells as part of the 1990 study at the Wright AAFTA (Figure 1-5); the samples were analyzed for metals, VOCs, and PAHs. Three metals (barium, chromium, and lead) were detected at levels that exceeded regulatory maximum contaminant levels (MCLs) (Appendix J). All three elevated constituents were found in monitor well WMW-1, and lead and chromium were found in monitor well WMW-2. Both locations are located downgradient of the fire training pad. No PAHs or VOCs were detected in any of the samples.

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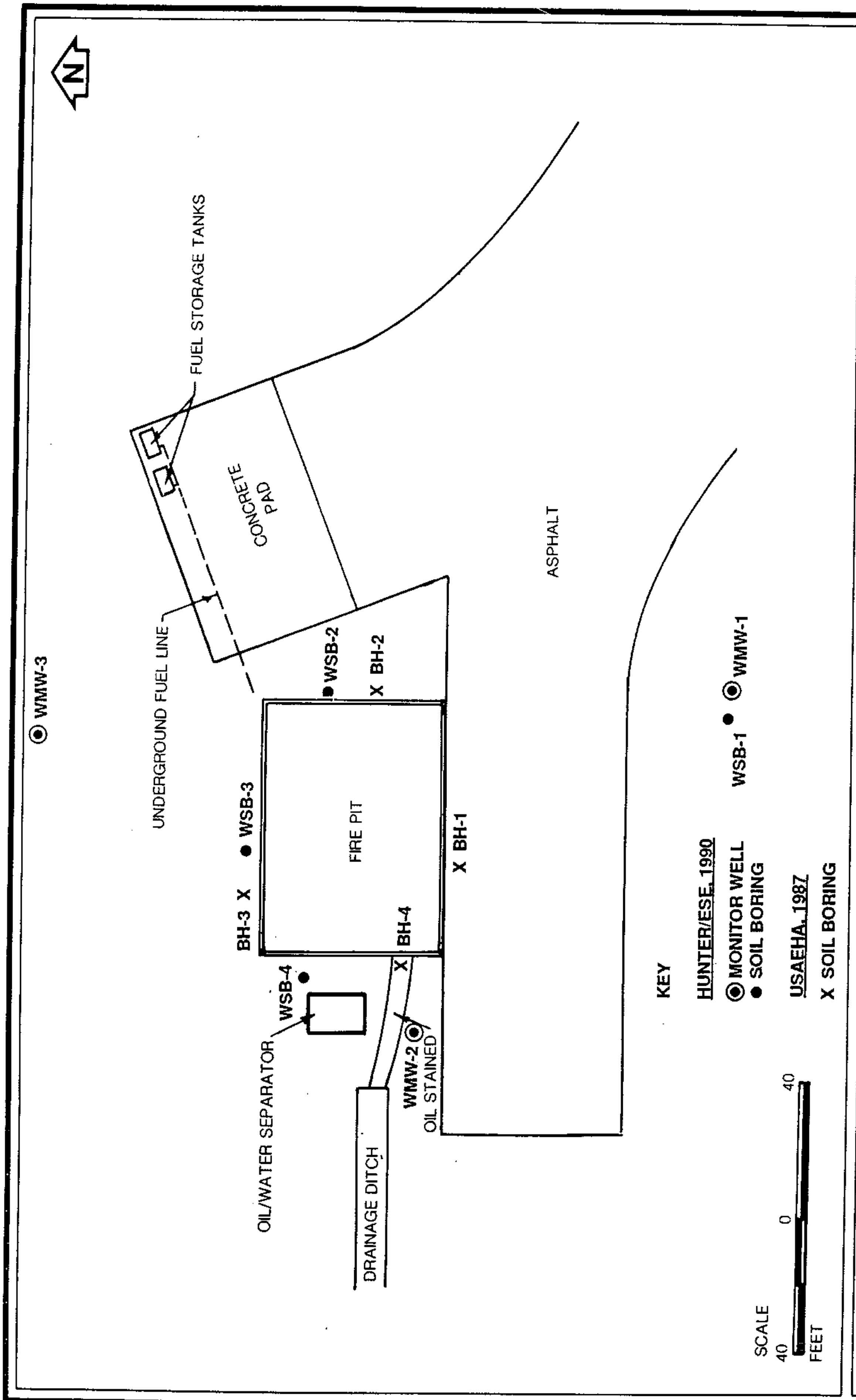

Figure 1-5
1987 AND 1990 SAMPLING LOCATIONS
WRIGHT AAFTA - FT. STEWART, GA

SOURCE: ESE, 1990.

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2.0 SCOPE OF WORK

The work described in this Significance of Contamination report for the Wright AAFTA was performed as required in the optional task order scope of work (SOW) dated May 23, 1991, and revised June 26, 1991. The field activities included 6 months of preliminary surficial water-table elevation monitoring, followed by soil, sediment, and groundwater sampling and analysis. All activities were conducted in accordance with the protocol described in the Contamination Evaluation/Closure Plan [Hunter/ESE, 1989, which includes as appendices the Chemical Data Acquisition Plan (CDAP), the Site Health and Safety Plan (SHSP), and the USACE Sample Handling Protocol]. The USACE-approved Addendum to the Work Plan (ESE, 1992) was used to guide Phase II of the SOW.

2.1 PREFIELD ACTIVITIES

Several prefield activities were scheduled to acquaint key project personnel with the previous activities performed at the site and to review the new scope of work. The prefield activities included the following:

1. A review of all existing data,
2. A hydrogeologic site assessment including site visits to determine the hydrogeologic character of the surficial aquifer at the site,
3. Work Plan preparation and approval, and
4. Meeting to discuss the scope of work with the field team.

2.2 PRELIMINARY HYDROGEOLOGIC CHARACTERIZATION

The results of previous field activities at the Fort Stewart Military Reservation indicate that fluctuations occur in the water-table elevation at the Wright AAFTA. To determine the magnitude of these fluctuations, groundwater levels were monitored in existing monitor wells at the site for the 6-month period preceding the current drilling effort. The monitoring period covered approximately 3 months during a wet season and 3 months during a dry season. The data generated were used to help select locations for new monitor wells (Section 2.5).

Groundwater levels were monitored continuously from July through December 1991 with a Telog® logging device, and once a month manually by ESE personnel. July, August, and September are generally the months with the most precipitation at the Wright AAFTA, and October, November, and December are generally dry (Hunter/ESE, 1989). Rainfall data for the 6-month period were received from the Hunter Army Airfield weather station, located approximately 35 miles east of Wright AAFTA.

All water level elevations were measured using existing survey data for the monitor well top of casing (TOC) elevations. Since the hydrogeologic characterization study was conducted, the previously existing and new wells have been resurveyed. The new survey data show slightly different elevations for the old well TOCs, but the differences are insignificant in terms of defining the orientation of the water table.

2.2.1 CONTINUOUS GROUNDWATER LEVEL MONITORING

The monitor well locations shown in Figure 2-1 are based on the topographic surveys provided in Appendix C. A Telog® data logging unit was installed in WMW-2 at the Wright AAFTA in July 1991. This unit continuously monitored water-level fluctuations (average, minimum, and maximum height of groundwater above the pressure transducer) at hourly intervals through December 1991.

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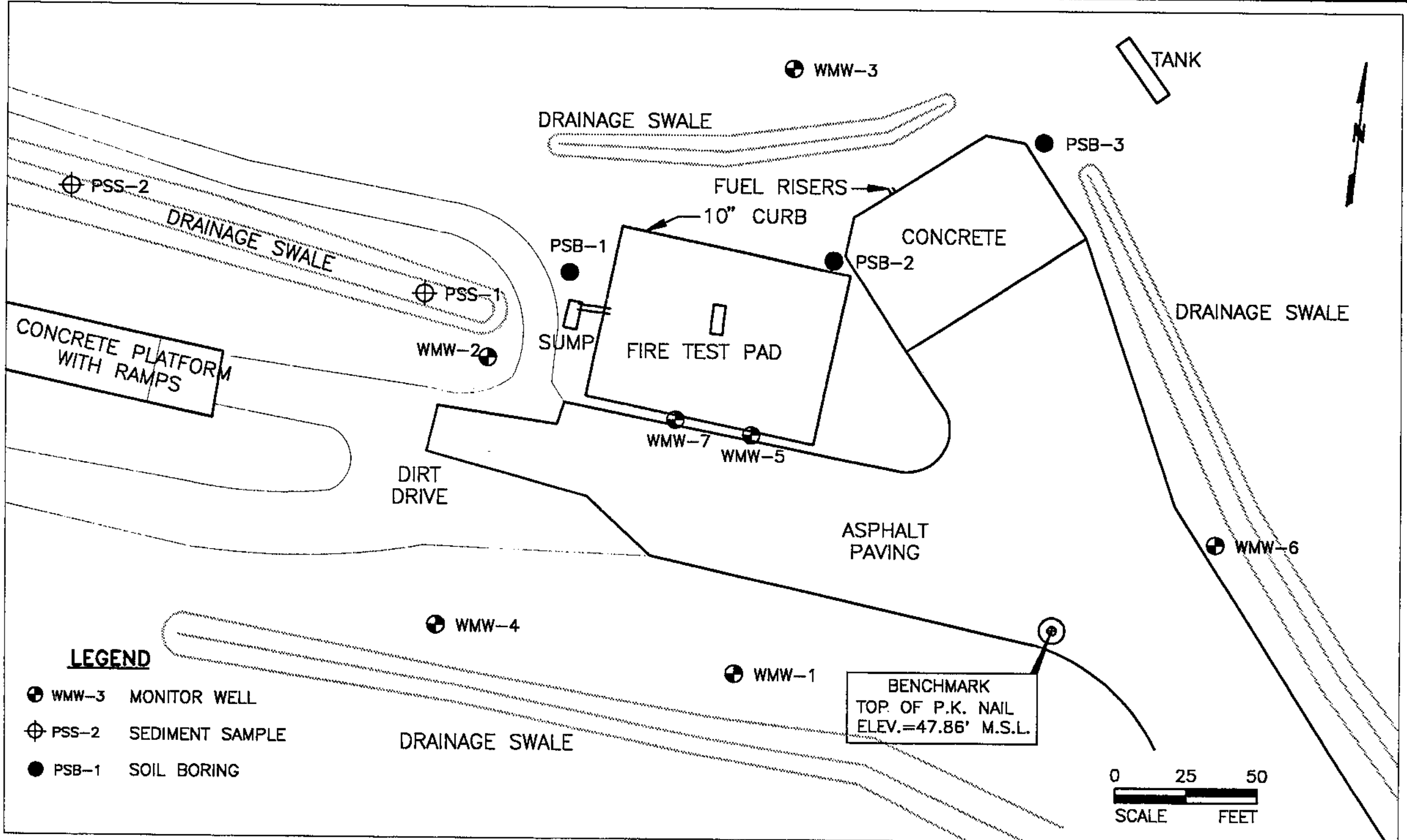

Figure 2–1

1992 SAMPLING LOCATIONS
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

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The Telog® transducer and cable were decontaminated by rinsing with deionized (DI) water prior to introduction into the well. The probe was lowered to the bottom of the well and then pulled back 1 ft. The cable was secured to the outside of the well casing with duct tape.

The electronics box was installed on the outside of the protective casing using small sheet metal screws. A small (less than one-quarter inch deep) V was cut out of the top of the protective casing to allow the cable to extend to the electronics box, allowing the protective casing cover to close securely without crushing the cable. Extra cable was secured outside the protective casing.

A graph of the Telog® data (Figure 2-2) shows a slight cyclic fluctuation recurring less than 24 hours between crests. These fluctuations, possibly due to tidal influences, are minor [approximately 0.25 ft per day (ft/day)], and have little effect on the overall groundwater gradient. The data also show sudden water-level increases over short times, followed by gradual decreases. These fluctuations appear related to rainfall events that occur periodically at the site. The Telog® data are included in Appendix D.

The maximum water height above the Telog® pressure transducer was 11.26 ft measured July 21, 1991; the lowest height of water was 5.20 ft measured December 19, 1991. The maximum groundwater fluctuation as determined by the Telog® data was 6.04 ft.

2.2.2 MANUAL GROUNDWATER LEVEL MONITORING

Water levels were obtained monthly July through December 1991 in wells WMW-1 through WMW-3 (Figure 2-1) using the wetted or electric tape methods.

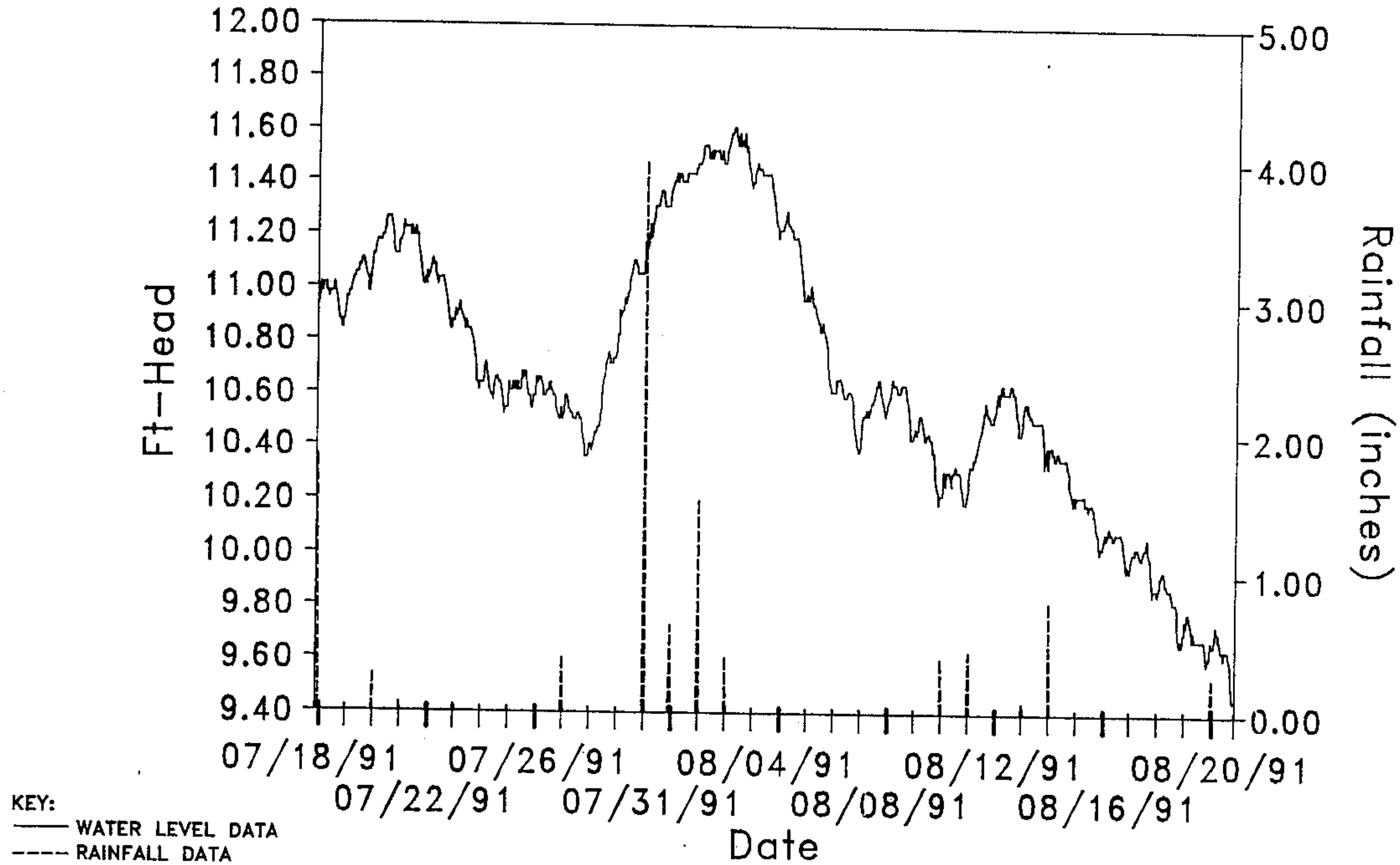

Figure 2-2 (PAGE 1 0F 5)
TELOG® WATER-LEVEL DATA IN WMW-2 AND AREA RAINFALL DATA, JULY TO DECEMBER 1991

SOURCE: ESE.

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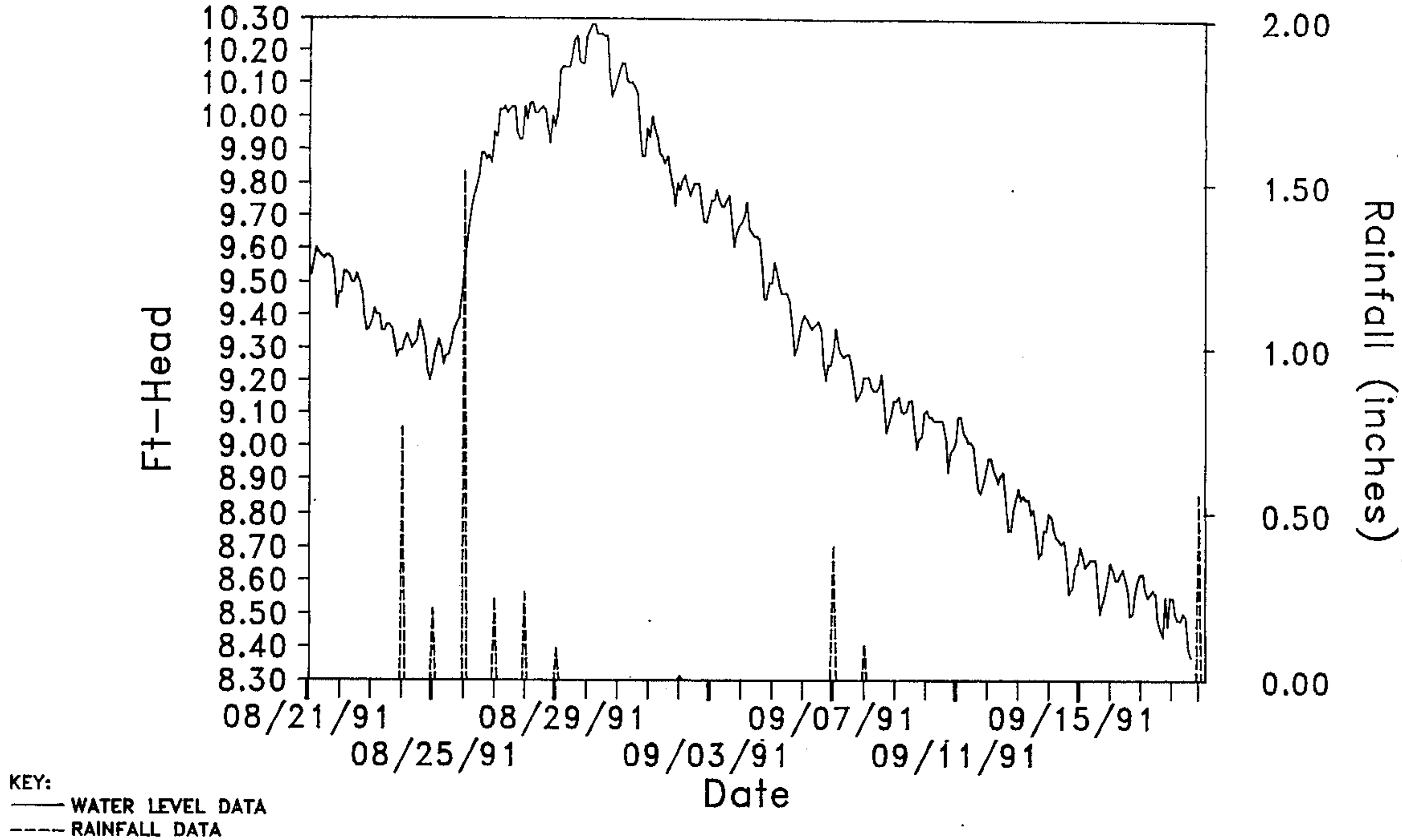

Figure 2-2 (PAGE 2 0F 5)
TELOG® WATER-LEVEL DATA IN WMW-2 AND AREA RAINFALL DATA, JULY TO DECEMBER 1991

SOURCE: ESE.

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WMW-2-3

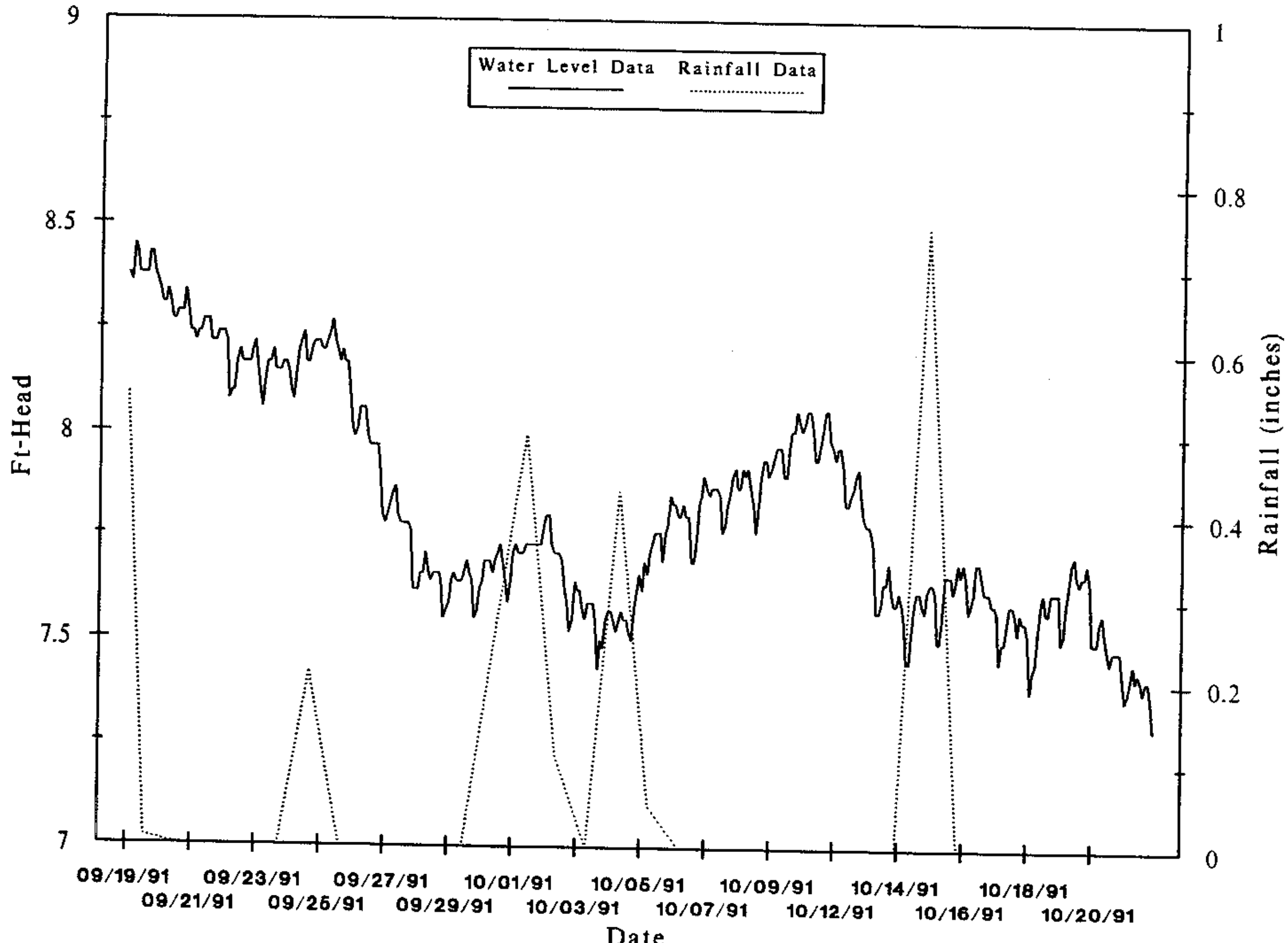

Figure 2-2 (PAGE 3 OF 5)
TELOG® WATER-LEVEL DATA IN WMW-2 AND
AREA RAINFALL DATA, JULY TO DECEMBER 1991

SOURCE: ESE.

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WMW-2-4

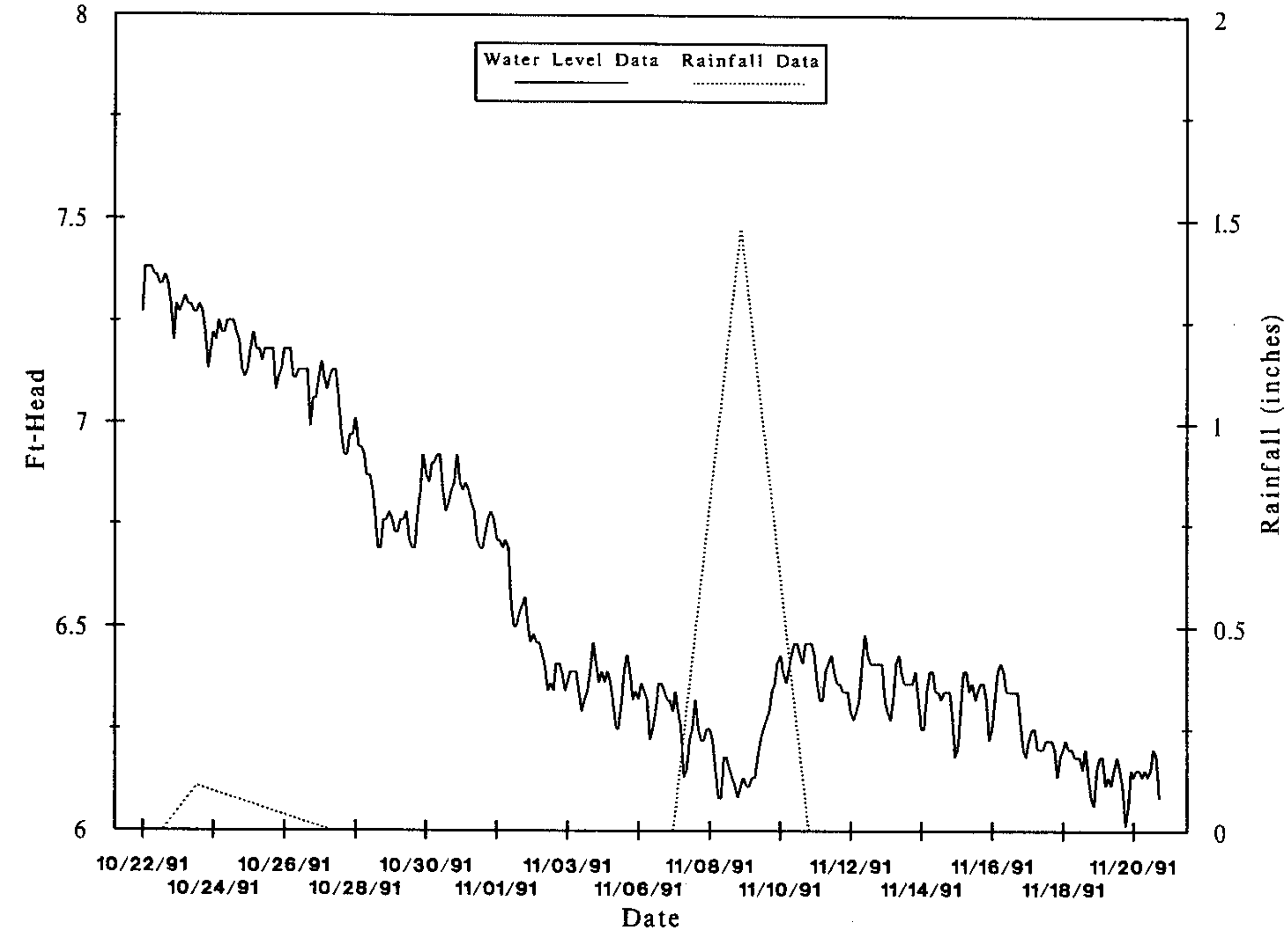

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Figure 2-2 (PAGE 4 0F 5)
TELOG® WATER-LEVEL DATA IN WMW-2 AND
AREA RAINFALL DATA, JULY TO DECEMBER 1991

SOURCE: ESE.

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WMW-2-5

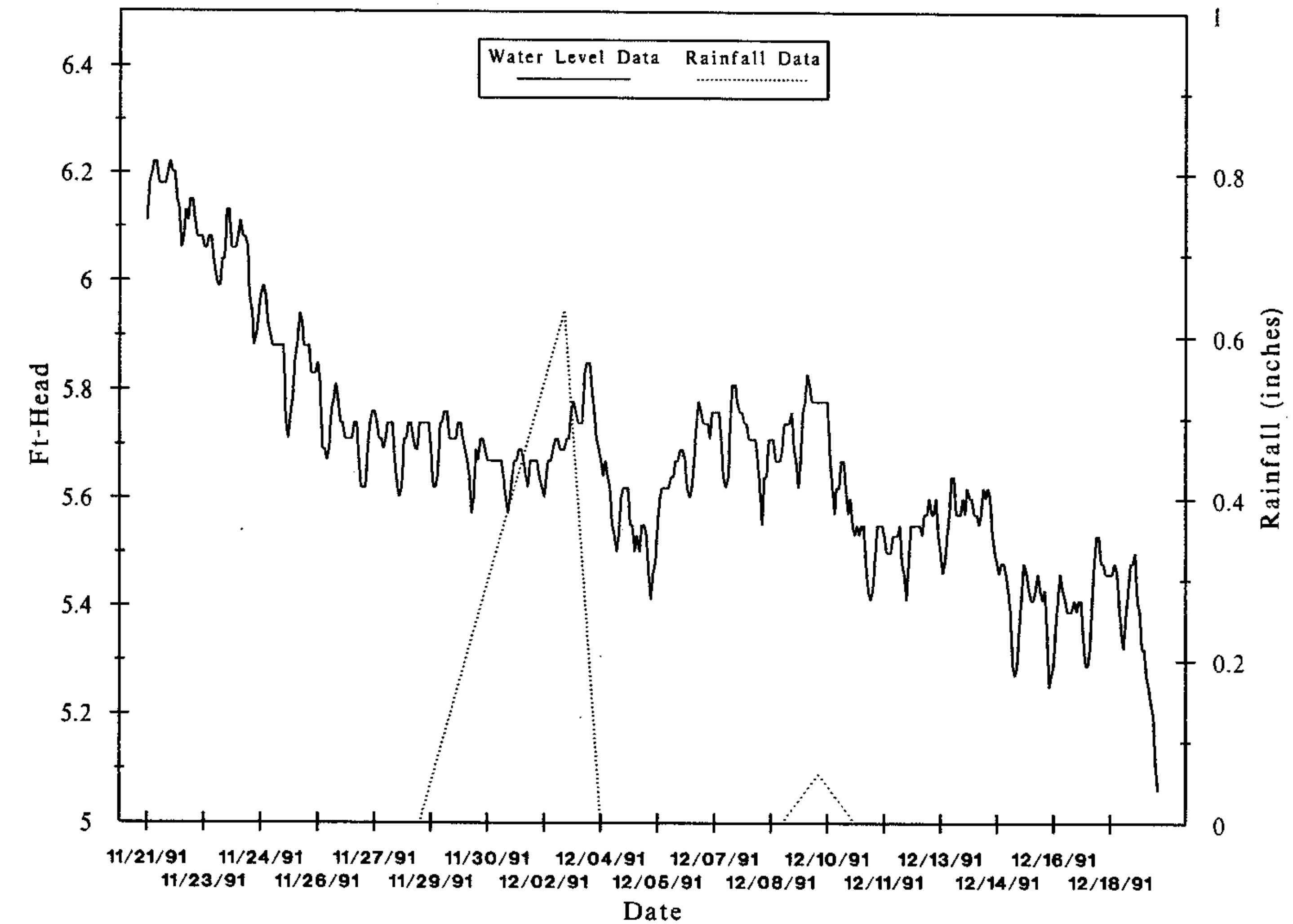

Figure 2-2 (PAGE 5 OF 5)
TELOG® WATER-LEVEL DATA IN WMW-2 AND
AREA RAINFALL DATA, JULY TO DECEMBER 1991

SOURCE: ESE.

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& ENGINEERING, INC.

FT. STEWART-WRIGHT SC 5/92MH

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All water levels were taken from a specific location marked on the top of the polyvinyl chloride (PVC) well casing.

The water-level tapes were decontaminated between wells using deionized (DI) water and transported between sites in a polyethylene bag. After the well cap was removed, a minimum of two water-level measurements were obtained at least 2 minutes apart to verify the static level. All water levels and times were recorded on appropriate water-level data sheets in the field logbook.

A decline in the water table elevation of approximately 6.8 ft between July and December was revealed by manual water level measurements in wells WMW-1 through WMW-3. This value is 0.74 ft less than that recorded by the Telog® unit.

A summary of the named water level measurements and elevation calculation is given in Table 2-1. Water table contour maps for each of the six months of monitoring are presented as Figures 2-3 through 2-8.

2.2.3 HYDRAULIC CONDUCTIVITY (SLUG) TESTING

The slug test was designed to estimate the hydraulic conductivity (K) of an aquifer in the vicinity of a specific monitor well quickly and easily. Test durations ranged from 2 to 50 min. Testing was accomplished by instantaneously changing the water level in the well by either introducing (slug-in) or removing (slug-out) a solid cylinder (the slug) to displace a volume of water. (One advantage of the slug method, as compared with the method of removing a slug of water from the well, is that it does not produce any water from the well, which in many cases may be contaminated and would require proper disposal). The rate at which the water level in the well returned to the static level was observed with the use of a pressure sensitive transducer and computerized datalogger. The datalogger was programmed to record the water

Table 2-1. Manually Collected Water Level Data, Wright AAFTA

WELL NUMBER	NORTHING	EASTING	CONCRETE BASE ELEVATION (ft msl)	TOP OF CASING ELEVATION (ft msl)	Date: 7/91 DEPTH TO WATER (ft toc)	Date: 7/91 WATER ELEVATION (ft msl)	Date: 8/91 DEPTH TO WATER (ft toc)	Date: 8/91 WATER ELEVATION (ft msl)	Date: 9/91 DEPTH TO WATER (ft toc)	Date: 9/91 WATER ELEVATION (ft msl)	Date: 10/91 DEPTH TO WATER (ft toc)	Date: 10/91 WATER ELEVATION (ft msl)
WMW-1	688146.86	685369.25	47.52	49.39	4.40	44.99	5.85	43.54	7.15	42.24	8.32	41.07
WMW-2	688247.15	685269.58	47.60	49.62	4.33	45.29	5.85	43.77	7.06	42.56	8.21	41.41
WMW-3	688362.72	685363.13	48.73	50.74	4.50	46.24	6.46	44.28	7.88	42.86	9.28	41.46

WELL NUMBER	NORTHING	EASTING	CONCRETE BASE ELEVATION (ft msl)	TOP OF CASING ELEVATION (ft msl)	Date: 11/91 DEPTH TO WATER (ft toc)	Date: 11/91 WATER ELEVATION (ft msl)	Date: 12/91 DEPTH TO WATER (ft toc)	Date: 12/91 WATER ELEVATION (ft msl)
WMW-1	688146.86	685369.25	47.52	49.39	9.63	39.76	10.78	38.61
WMW-2	688247.15	685269.58	47.60	49.62	9.46	40.16	10.56	39.06
WMW-3	688362.72	685363.13	48.73	50.74	10.69	40.05	11.85	38.89

Notes: ft msl = feet above mean sea level
ft toc = feet below the top of casing

35

9217CG02

Aug 12, 1992 – 14:35:14

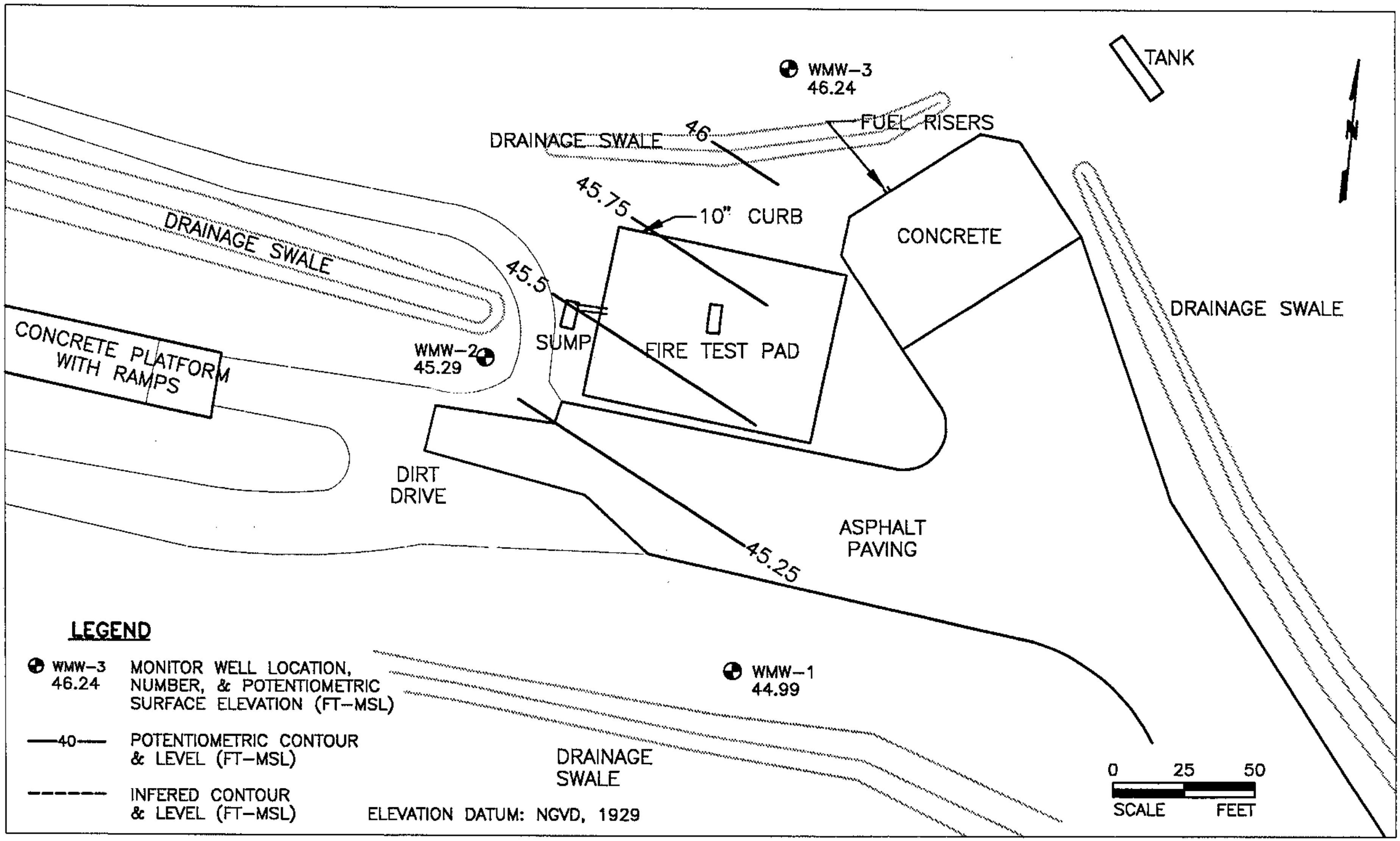

Figure 2–3

POTENTIOMETRIC SURFACE CONTOUR MAP – 7/91
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

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9217CG03

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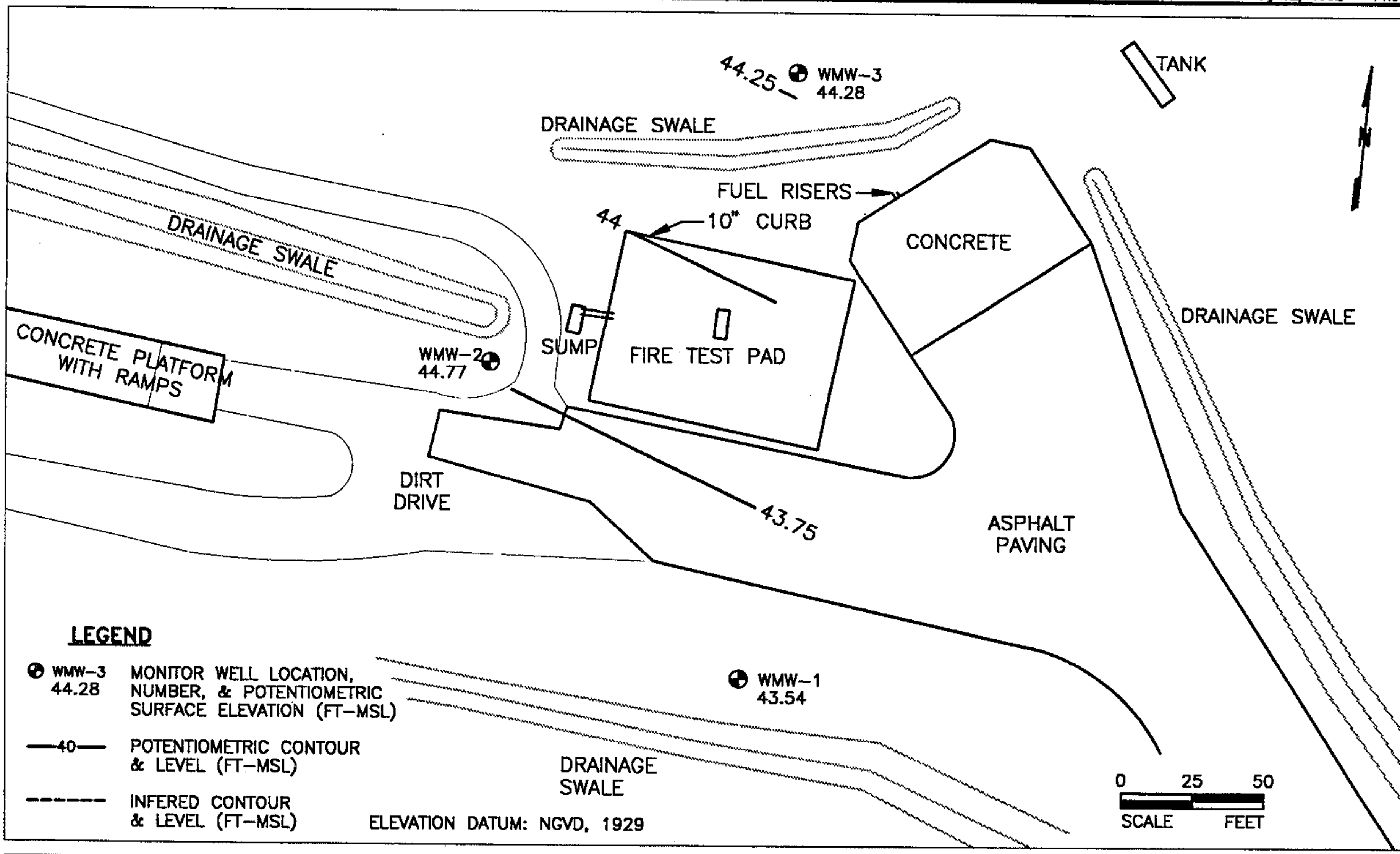

Figure 2–4

POTENTIOMETRIC SURFACE CONTOUR MAP – 8/91
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

Environmental Science & Engineering, Inc.

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9217CG04

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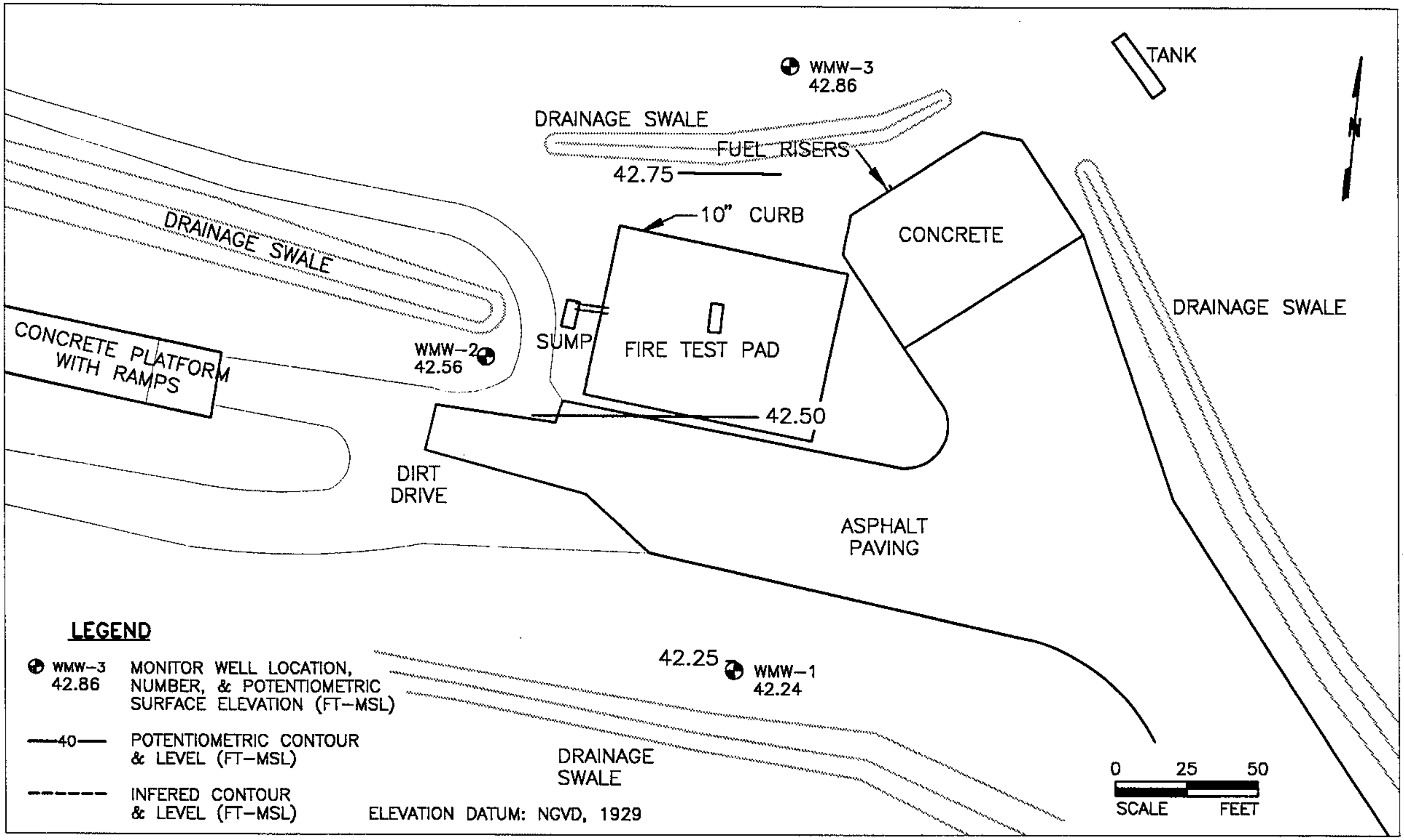

Figure 2–5

POTENTIOMETRIC SURFACE CONTOUR MAP – 9/91
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

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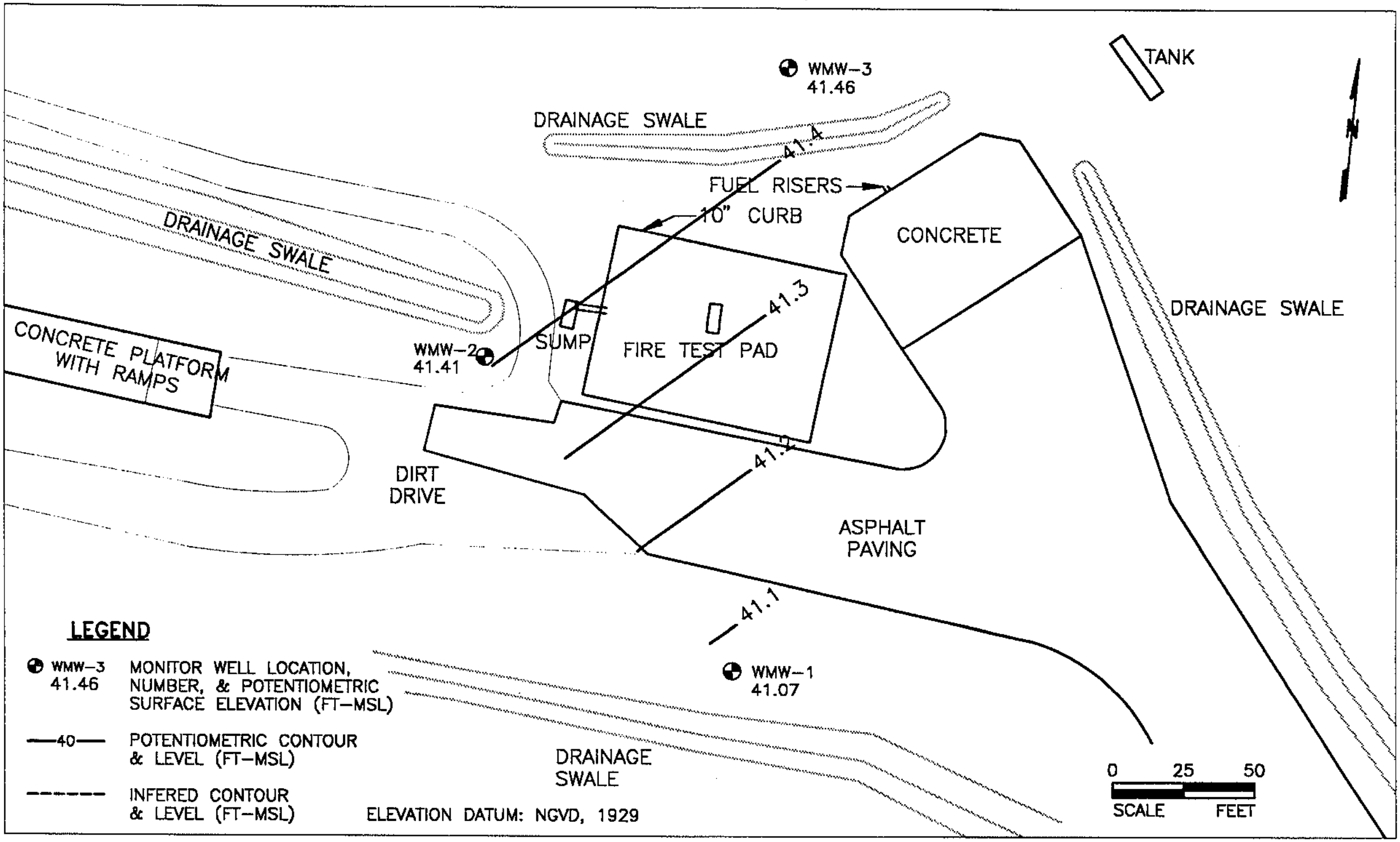

Figure 2-6

POTENTIOMETRIC SURFACE CONTOUR MAP - 10/91
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

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Engineering, Inc.

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Sept 29, 1992 – 10:29:07

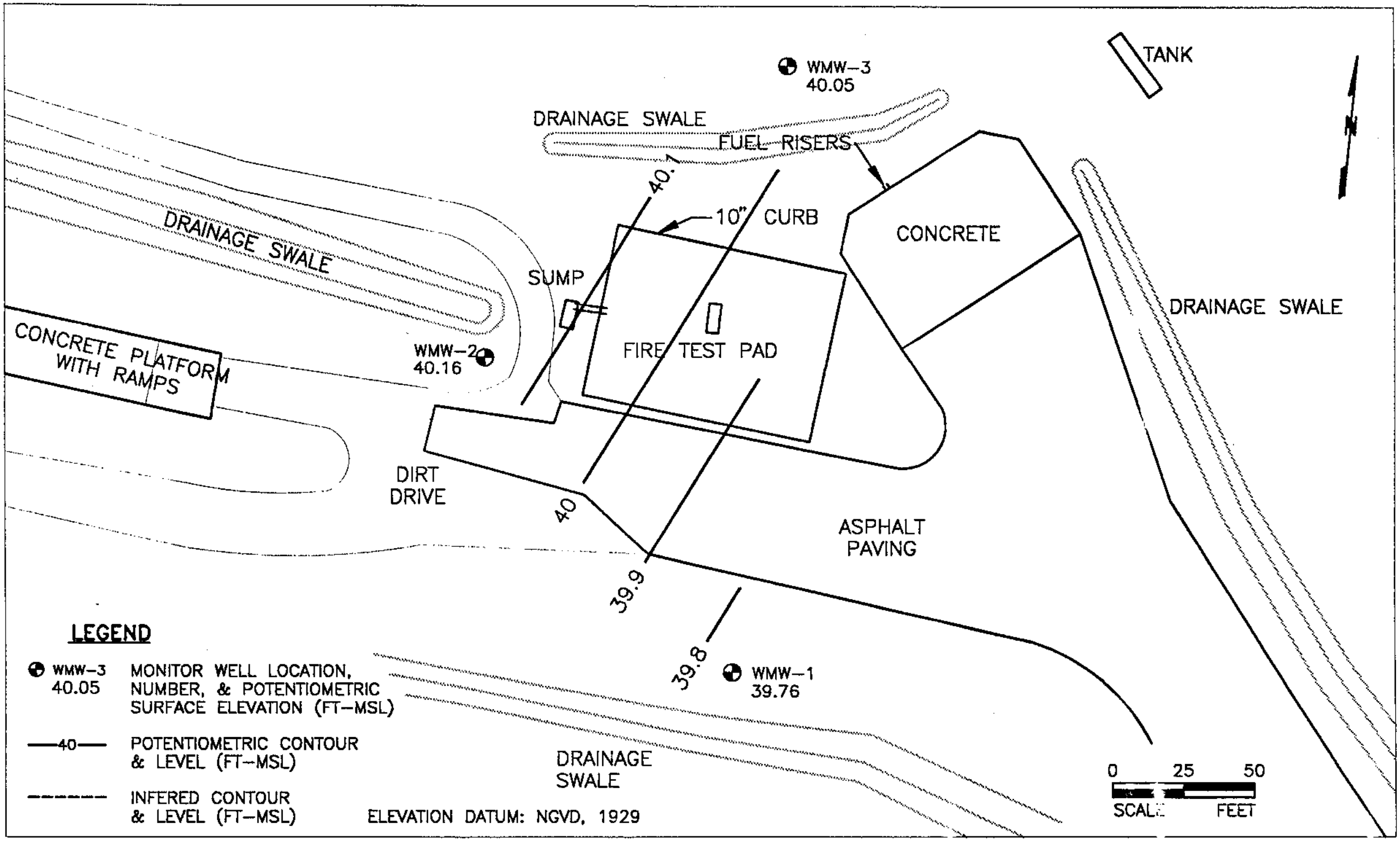

Figure 2-7

POTENTIOMETRIC SURFACE CONTOUR MAP – 11/91
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

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40

9217CG07

Aug 12, 1992 – 15:13:16

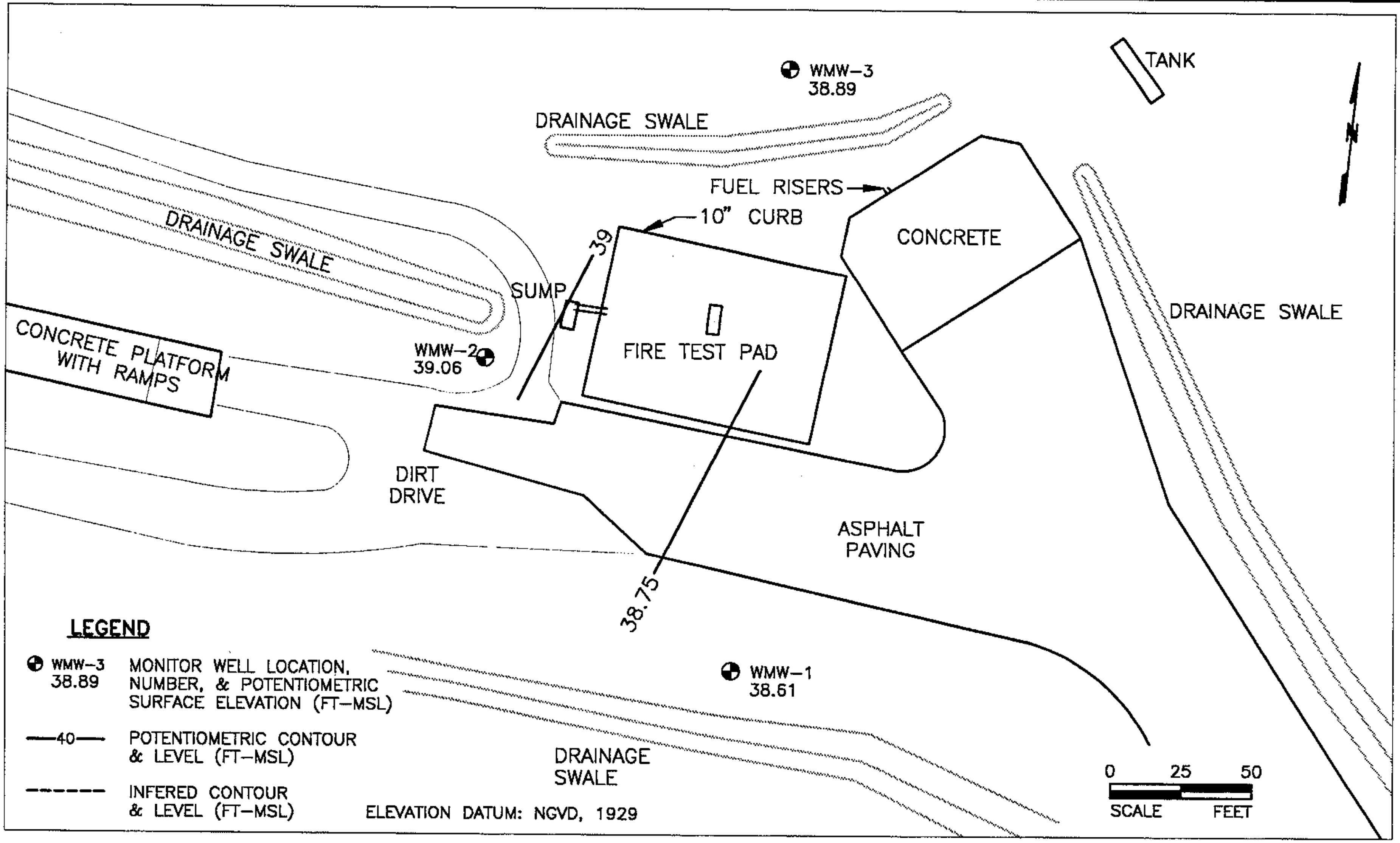

Figure 2-8

POTENTIOMETRIC SURFACE CONTOUR MAP – 12/91
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1992.

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level at specific time intervals (generally multiple readings per second) during the test.

Following the test, the data was downloaded from the datalogger to a personal computer for analysis. The raw data were configured into a specific format then loaded into a computer program which used the Bouwer and Rice (1976) method for calculating the value of hydraulic conductivity. The data were first graphed by the program. Slug-in and slug-out data were plotted as a curve representing the change in water level versus the elapsed time of the test. The program then matched this curve to a theoretical curve from an idealized aquifer response based on the Theis equation. From this comparison and a series of calculations, the program determined the hydraulic conductivities of the aquifer in the immediate vicinity of wells WMW-5 and WMW-7 as 0.0022 ft/min and 0.00008 ft/min, respectively.

2.2.4 GROUNDWATER FLOW DIRECTION AND VELOCITY

The preliminary results of the hydrogeologic evaluation indicate the water table gradient is generally toward the south at the Wright AAFTA site. The gradient did fluctuate during the monitoring period, showing flow toward the southwest during the rainy summer months and toward the south and southeast during the dry winter months. The direction of flow correlates well with the average piezometric surface elevation.

Based on the data from WMW-1, WMW-2, and WMW-3 (see Table 2-1), the average groundwater gradient is approximately 0.0035 feet per foot (ft/ft) tending to the south. Assuming an aquifer porosity of 30 percent and a hydraulic conductivity of 2.2×10^{-3} ft/min (based on the slug tests) the linear groundwater flow velocity is estimated to be 13.7 feet per year (ft/yr). The formulae and calculations are included in Appendix E.

2.3 SOIL BORINGS

A total of three soil borings at the Wright AAFTA was drilled March 9 and 10, 1992 using hollow-stem augers and sampled to determine the extent of soil contamination onsite. These soil boring locations are presented on Figure 2-1. PSB-1 is between the oil/water separator and the drainage ditch and was intended to assess the potential overflow from the oil/water separator, PSB-2 is near an underground fuel line adjacent to the fire pit, and PSB-3 is adjacent to the fuel storage tanks.

A Central Mine Equipment (CME) continuous split-barrel sampler was used to obtain a continuous soil sample in the first 5 ft of the borehole. Samples were then obtained at 5 to 7 and 10 to 12 ft-bls using split-barrel samplers.

The VOC sample fractions were immediately taken from the sampler and placed in prelabeled 40 milliliter (ml) vials as specified in the CDAP (ESE, 1989). The remaining sample was composited by mixing in a stainless steel bowl with stainless steel utensils; the sample was then placed in prelabeled quart amber glass jars with Teflon®-lined lids. One of the two quart jars used for each sample was filled only half-way with sample, covered with aluminum foil, and placed in the shade to equilibrate prior to headspace analysis; the jar was left in the shade for a minimum of 15 minutes prior to analysis. The PID analyzer probe was used to puncture the aluminum foil and measure the concentration of organic vapors in the sample jar headspace. This value was recorded on the boring logs. After each sample was analyzed, the aluminum foil was removed, and a Teflon®-lined lid was used to seal the jar prior to shipment to the ESE Gainesville laboratory for analysis.

The headspace readings were taken for additional screening data from monitor well samples. These data could indicate the potential for vadose zone soil contamination in areas where soil boring samples were not obtained. The work plan also included sample headspace monitoring in soil boring samples along with the analytical work to determine if the results of the soil headspace data could be used to indicate the relative existence of elevated volatile constituents in the soil.

Sample WRITS1*11, from the 0- to 5-ft depth interval in soil boring WSB-2, was split with USACE. The sample split was shipped to the Missouri River District (MRD) laboratory in Omaha, Nebraska. A duplicate sample, WRITS1*10, was taken at WSB-3 from the 0- to 5-ft-depth interval. The duplicate sample was shipped with the other samples to the ESE laboratory in Gainesville.

All analytical soil samples were placed in plastic coolers with ice prior to shipment. The sample handling, chain-of-custody, and quality assurance (QA) procedures followed the CDAP (ESE, 1989) and the USACE Sample Handling Protocol (USACE, 1986).

Lithologic descriptions were made of the site soils by an ESE geologist. These logs are included in Appendix F.

After the borings were completed, the boreholes were abandoned by grouting using a mixture of 7 gallons (gal) of water to one sack (94 pounds) of portland cement. The grout was tremmied into the borehole to ground level. Before the drillers left the site, all grout levels were checked and topped off as necessary.

All sampling equipment decontamination procedures followed the site-specific CDAP (Hunter/ESE, 1989).

2.4 SEDIMENT SAMPLES

Two sediment samples were taken March 10, 1992 from a ditch located adjacent to the Wright AAFTA pad. The sediment samples were taken using a stainless steel Oakfield sampler. The sampler was advanced approximately 6 inches into the sediment between the submerged edge and the deepest portion of the ditch at the locations in Figure 2-1. Sediment Station PSS-1 was located approximately 40 ft downstream of the site. Station location PSS-2 was approximately 150 ft downstream of PSS-1.

The sample station farthest downstream (PSS-2) was sampled first to prevent any upstream sediment from compromising the downstream sample quality. Both sample locations were approached from the downstream side for the same reason.

Sample WRITS1*15, from Station WSD-2, was split with USACE. The sample split was shipped to the MRD laboratory in Omaha, Nebraska. A duplicate sample, WRITS1*14, was also taken at Station WSD-2. The duplicate sample was shipped with the other samples to the ESE laboratory in Gainesville.

2.5 MONITOR WELL INSTALLATION AND DEVELOPMENT

Monitor well locations were determined based on the data presented in the Contamination Evaluation/Closure Plan (ESE, 1990), and the results of the preliminary hydrogeologic characterization (Section 2.2). The monitor well locations are presented in Figure 2-1. The location of WMW-4 was selected because it is downgradient of the fire training pit, where the flow direction is south-southwest most of the year. Shallow well WMW-6 is located adjacent to the fire pit to assess contaminant levels near the source. The location of WMW-5 was chosen because of the seasonal southeast groundwater flow direction. Deep well WMW-7 was placed adjacent to WMW-5 to determine if elevated levels of dissolved constituents exist at depth in the area with the highest potential for contamination (adjacent to the source).

The monitor well boreholes were installed March 5 through March 9, 1992 using 4-7/8-inch inside diameter (ID) hollow-stem augers. Soil samples were obtained from the shallow well boreholes (WMW-4, WMW-5, and WMW-6) using a CME continuous split-barrel sampler. Soil samples from the deep well (WMW-7) were obtained at 5-ft intervals using a 1-7/8-inch ID split-barrel sampler in accordance with American Society for Testing and Materials (ASTM) D-1586. Soil samples were used to prepare lithologic logs of the boreholes. Copies of the lithologic logs, including well construction details, are presented in Appendix F. A total of four representative soil samples from the screened zones of the wells was shipped to the ESE geotechnical soils laboratory for sieve analyses using methods ASTM D-422 and ASTM D-1140.

Monitor wells were constructed inside the hollow stem augers. The shallow monitor wells were constructed of 2-inch-diameter Schedule 40 PVC casing with threaded joints and 12.5 ft of 0.010-inch slot well screen. The top of the well screen was placed above the water table and approximately 3 feet below land surface (ft-bls) to intercept phase-separated hydrocarbons (if present) on the water table. The large fluctuation in groundwater levels at this site (see Section 2.2) warranted the use of 12.5 ft of screen rather than the 10 ft called for in the initial scope of work.

The annular space surrounding the screen was backfilled with clean, 20/30 silica sand to at least 1.5 ft above the top of the screen using a tremmie pipe. As the sand filled the augers, the augers were slowly lifted, allowing the sand to empty from the augers and flow into the annulus between the borehole and the well casing.

In shallow wells, a seal consisting of Volclay® bentonite grout was placed above the sand pack. The grout consisted of 2.1 pounds of Volclay® and 1 gal of water. The grout was mixed according to the manufacturer's specifications and allowed to cure at least 24 hours prior to the installation of the antipercolation pad.

The deep monitor well (WMW-7) was constructed of 2-inch diameter, Schedule 40 PVC casing with threaded joints and a 0.010-inch slot size screen. A 10-ft screened interval was set from approximately 40 to 50 ft-bls. The sand pack extended from the bottom of the well to 4 ft above the top of the well screen. Due to problems setting WMW-7, the original borehole was grouted and a new boring was made for well installation.

The original borehole for monitor well WMW-7 was abandoned during well placement as the bentonite pellets bridged in the augers just below the tremmie pipe. As the pellets could not be cleared from the bottom of the auger, the auger was removed from the borehole, and the borehole was subsequently abandoned. The abandoned borehole was grouted using a Portland® cement grout mix of 7 gallons of water added to each (94 lb) sack of Portland® cement. The grout was pumped through Tremie pipe to the bottom of the borehole, thus grouting the borehole from the bottom up. The new borehole and final location of WMW-7 is approximately 10 ft to the west of the abandoned borehole.

In the deep well, a 2-ft-thick bentonite clay seal comprised of 1/4-inch-diameter bentonite pellets was placed directly above the sandpack. The pellets were allowed to hydrate 24 hours prior to completing the well. The remaining annular space was backfilled to the land surface with a Portland® cement grout comprised of 7 gal of water to 94 pounds of cement. A centralizer was used on the deep well to center the casing in the well. The centralizer was set 5 ft above the screen zone.

The monitor wells were completed at the ground surface with 3-ft by 3-ft concrete antipercolation pads and protected above grade with locking steel protective casings. A 1/8-inch-diameter drain hole was drilled in the protective casings approximately 6 inches above the concrete pads. The tops of the pads were sloped away from the protective casings to prevent water from ponding and infiltrating the joint between the protective casings and the pads. The tops of the wells were capped inside the protective casings to keep airborne particulates and insects from entering the wells. The caps were vented to prevent air pressure buildup in the wells due to water-level changes. The general well construction details are presented in Figure 2-9 and are summarized in Table 2-2; information for the pre-existing wells WMW-1 to WMW-3 is included in the table. Well construction data sheets are included in Appendix F.

Three protective posts were installed around each well. The posts are 5-ft long by 2 1/2-inch-diameter steel pipe, and are set in concrete in 1-ft-deep by 4.5-inch diameter holes. The pipes were filled with concrete and painted to make them visible to traffic.

State Plane Coordinates and elevations of the monitor wells at the Wright AAFTA were measured during a control survey. The results of the survey, performed by EMC Engineering Services, Inc. (EMC), of Savannah, Georgia, are included in Table 2-2. Appendix J is a site map prepared by EMC that shows all of the site features and well locations.

The monitor well development was performed March 8 to March 11, 1992 (no sooner than 48 hours after well installation). The monitor wells were developed using a surge block with alternate purging using a Brainard Killman (B-K) 1.7-inch-diameter hand pump. The following procedures were followed:

1. The initial sand and silt in the bottom of the well was removed by pumping.
2. The surge block was lowered to approximately 3 to 5 ft below the water table and gently moved up and down in 3-ft strokes.
3. The surge block was removed from the well and sand and fines allowed to settle.
4. The well was pumped to remove the sand and fines from the bottom and pH, temperature, and conductivity readings were taken.
5. Surging was continued at a slightly lower level with an increase in the surging force.
6. The surging and pumping continued for a minimum of 4 hours and until the pH and conductivity had stabilized and sediment was no longer present in the discharge water.

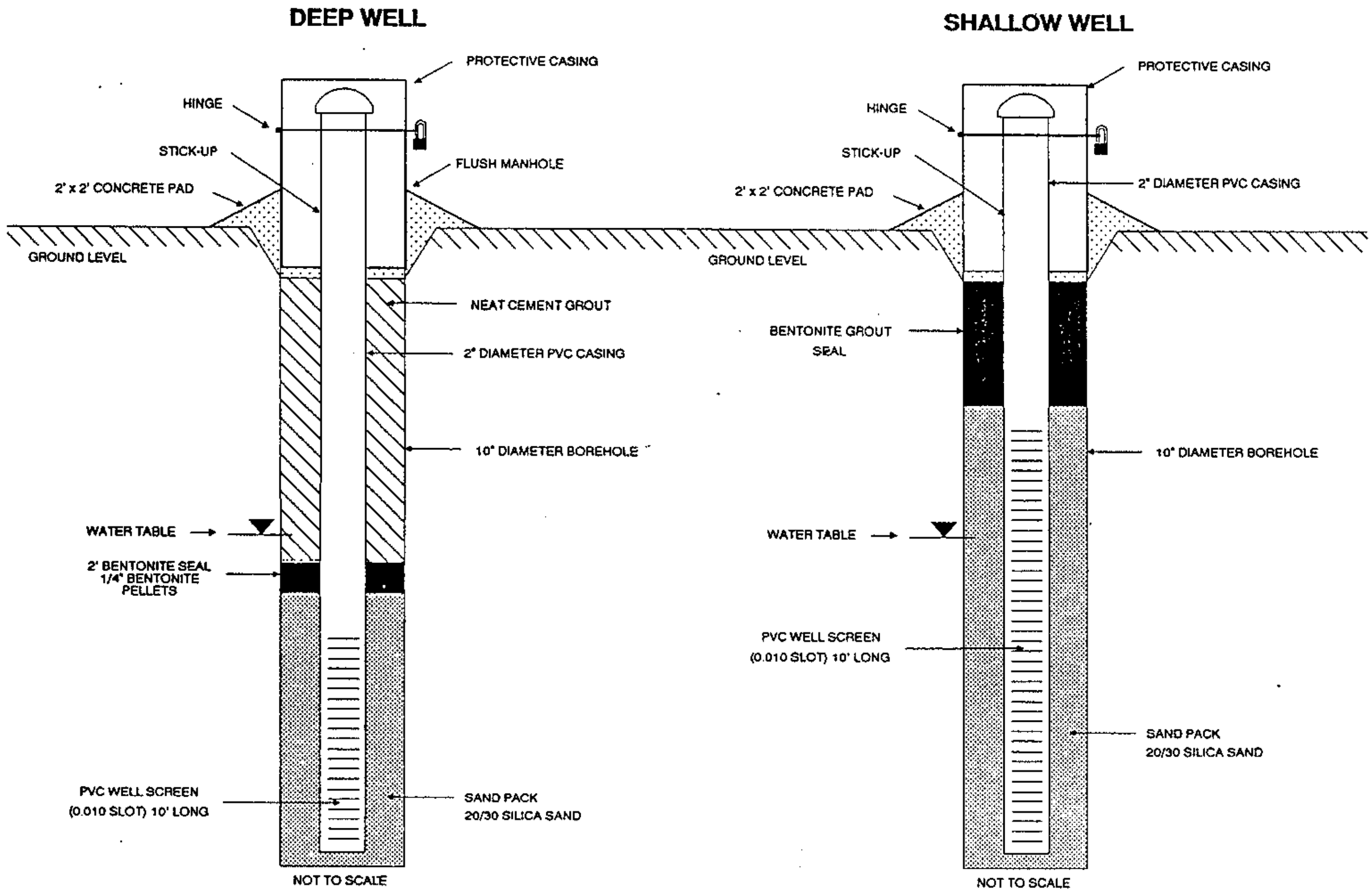

Figure 2-9
MONITOR WELL DIAGRAM,
WRIGHT AAFTA - FT. STEWART, GA

SOURCE: ESE.

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Table 2-2. Monitor Well Completion and Location Survey Summary, Wright AAFTA

Well Number	Northing	Easting	Top of Casing Elevation (ft-msl)	Boring Diameter (inches)	Boring Depth (ft bls)	Sandpack Interval (ft bls)	Bentonite Seal (ft bls)	Screen Interval (ft bls)	Well Diameter (inches)	Grout Interval (ft bls)
WMW-1	688146.86	685369.24	49.39	10.25	15.00	2.5 - 15.0	1.0 - 2.0	2.5 - 12.5	2	0 - 1.0
WMW-2	688247.14	685269.57	49.62	10.25	15.00	2.0 - 15.0	1.0 - 2.0	3.0 - 13.0	2	0 - 1.0
WMW-3	688362.71	685363.12	50.74	10.25	15.00	2.5 - 15.0	1.5 - 2.5	3.0 - 13.0	2	0 - 1.5
WMW-4	688150.64	685263.33	48.91	8	15.50	3.0 - 15.5	0 - 1.5	3.0 - 15.5	2	--
WMW-5	688231.50	685364.62	50.00	8	15.50	3.0 - 15.5	0 - 1.5	3.0 - 15.5	2	--
WMW-6	688213.84	685531.23	49.65	8	15.50	3.0 - 15.5	0 - 1.5	3.0 - 15.5	2	--
WMW-7	688233.54	685337.62	49.89	8	50.00	36 - 50	34 - 36	40 - 50	2	0 - 34

Note: ft bls = feet below land surface.
ft-msl = feet mean sea level.
-- = Bentonite seal installed to surface.

*Boring diameter presented is the diameter of the boring in the sand pack zone only.

Source: ESE.

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Temperature, pH, and specific conductance were monitored to ensure the water quality had stabilized. The total amount of water purged, pH, specific conductance, and temperature were measured and recorded on well development forms in the field notebook. Copies of these forms are included in this report as Appendix G. A summary of well development is presented in Table 2-3.

The results of the development revealed slight color and cloudiness in the wells. Discussions with field team members indicated the well water had a cloudy appearance but contained no apparent suspended solids; however, monitor well WMW-7 had traces of suspended sediments after over 5 hours of purging.

The monitor wells were developed a second time during the period of January 13 through January 15, 1993, in order to verify the developed condition of the groundwater with photographic slides. On these dates, all wells except WMW-7 developed clear with pumping a minimum of 3 well volumes. Due to excessive silt in WMW-7, the well was developed an additional 8 hours, then resampled. The final water condition of WMW-7 was clear, free of sand and silt.

2.6 GROUNDWATER SAMPLING AND ANALYSES

Groundwater samples were obtained from each of the three previously installed and four newly installed wells March 11 to March 14, 1991 (no sooner than 4 days following development). The samples were obtained using the methods outlined in the following paragraphs and the CDAP as revised in the Addendum to the Work Plan (ESE, 1991).

Immediately prior to purging a well, the static water level below the top of the well casing was measured from a reference point previously marked on the top of the well casing. Measurements were made and recorded to the nearest 0.01 ft on well sampling forms in the field notebook. An oil/water interface probe was also used to check for free product floating on the water.

The volume of water in the well, including the saturated pore volume (assumed at 30 percent) of the annular sand pack, was calculated based on the static water level and the well construction information. Well volume calculations were

Table 2-3. Well Development Record, Wright AAFTA

Well Number	Date	Total Surging Time (min)	Total Pumping Time (min)	Total Volume Discharged (gal)	Final Condition
WMW-4	03/08/92	75	180	72	Clear,
	01/15/93	-	32	34	no sand
					or silt
WMW-5	03/08/92	60	120	80	Clear,
	01/15/93	-	30	33	no sand
					or silt
WMW-6	03/08/92	60	120	60	Clear,
	01/15/93	-	24	35	no sand
					or silt
WMW-7	03/10/92	75	240	100	Clear,
	01/13/93	135	99	80	no sand
	01/15/93	143	83	75	or silt

Note: gal = gallon.
min = minute.

Source: ESE.

recorded on well sampling forms in the field notebook. Copies of these forms are presented in Appendix H.

A centrifugal pump was used to purge at least three well volumes from all of the wells except the deep well (WMW-7). The deep well was bailed dry three times, allowed to recharge to 80 percent of the original volume each time, then sampled. Temperature, pH, and specific conductance were monitored with a Hydrolab® 4041 to ensure the water quality had stabilized prior to sample collection. The Hydrolab 4041 was calibrated in accordance with the manufacturers' instructions and documented on calibration forms in the field notebook. The total amount of water purged, pH, specific conductance, and temperature were measured and recorded on well sampling forms in the field notebook.

The monitor wells were sampled using Teflon® bailers, decontaminated in accordance with the CDAP. A new nylon cord was used for each well to lower the bailer into the well. The bailer was rinsed at least once with well water (this was discarded) prior to collecting a sample. All sampling equipment was protected from contact with potentially contaminated soil surfaces by covering the ground around the well with disposable polyethylene plastic sheeting.

Sample WRITW1*9, from monitor well WMW-4, was split with USACE. The sample split was shipped to the MRD laboratory in Omaha, Nebraska. A duplicate sample, WRITW1*8, was also taken at WMW-4. The duplicate sample was shipped with the other samples to the ESE laboratory in Gainesville, Florida. An equipment blank, WRITW1*11, was taken in the field. VOC trip blanks, samples WRITW1*13 and WRITW1*14, were packed with VOC samples shipped on March 11, 1992, and with samples delivered by the field crew to the ESE laboratory in Gainesville, Florida, on March 14, 1992, respectively.

On January 15, 1992, an additional groundwater metals sample was obtained from WMW-7 after the well was developed an additional 8 hours. FTSTEB2*4 was the sample, FTSTEB2*3 was the duplicate sample, and FTSTEB2*6 was the equipment blank. A split sample FTSTEB2*5 was sent to the MRD Laboratory.

The only significant drop in concentrations detected during the second round of sampling was for Barium (dropped from 129 to 66.1 μg/L).

2.7 DECONTAMINATION

The following decontamination procedures were used for field equipment that contacted sample matrices:

1. Organic compounds and trace metals analyses:
    a. Cleaned with Liquinox® and tap water, using a brush when necessary to remove particulate matter and surface films;
    b. Rinsed thoroughly with tap water;
    c. Rinsed thoroughly with DI water;
    d. Rinsed twice with pesticide-grade isopropanol;
    e. Allowed to air dry; and
    f. For overnight storage, wrapped in aluminum foil, to prevent contamination.
2. Groundwater purging and monitoring equipment:
    a. Rinsed elevation tapes with tap water followed by DI water and placed in a polyethylene bag to prevent contamination during storage or transit;
    b. Rinsed the downhole well tubing, hoses, and submersible pumps with copious amounts of tap water followed by DI water; and
    c. If the inside of the tubing/hoses could not be rinsed adequately, tap water and deionized water were pumped through the tubing.
3. Drilling equipment:
    a. All drilling equipment was steam cleaned prior to site mobilization; and
    b. Between borings, all downhole drilling equipment was steam cleaned at a central location to remove traces of soil, rock, or other contaminants.

Decontamination operations were conducted at a decontamination pad set up near the site. The decontamination water and sediments were collected and placed in U.S. Department of Transportation (DOT)-approved 55-gal drums for storage and disposal.

2.8 PURGE WATER, DECONTAMINATION WATER, AND SOIL DISPOSAL

All purge water (from monitor well development and sampling), decontamination water, and drill cuttings were placed in 55-gal DOT-approved drums, labeled, and sealed prior to leaving the well site. If analytical results indicate the presence of regulated concentrations of hazardous constituents, the optimum method of disposing of wastes will be determined by ESE.

2.9 SAMPLE HANDLING, PACKAGING, AND SHIPPING

All analytical samples were placed in the appropriate sample containers as specified in the U.S. Environmental Protection Agency (EPA) Standard Operating Procedures and Quality Assurance Manual, Appendix A (April 1, 1986).

The samples were then wrapped with a cushioning material and placed in a plastic cooler. A sufficient amount of bagged ice was then placed in the cooler to keep the samples at 4 degrees Celsius (°C) until arrival at the laboratory.

All necessary chain-of-custody documentation required to accompany the samples during shipment was placed in a sealed plastic bag and taped to the underside of the cooler lid. The cooler was sealed with fiber tape, and custody seals were placed so any opening of the cooler prior to arrival at the laboratory could be detected. Sample volume requirements, sample container requirements, holding times, and preservation requirements were specified in the CDAP. Chain-of-custody forms are presented in Appendix I.

All samples requiring chemical analysis were transported at the end of each day to the ESE and USACE QA laboratories by overnight courier. Samples that were sent to the USACE QA laboratory were packaged and shipped in accordance with USACE Sample Handling Protocol, Medium Concentration Sample, specified in the CDAP. The holding time criteria specified in the CDAP were followed.

3.0 CONTAMINATION ASSESSMENT RESULTS

3.1 SUBSURFACE CONDITIONS

During the drilling, four soil samples were obtained from the well borings for mechanical (sieve) analysis. The soil samples were obtained from the screened zones of the four wells installed during the Phase II field effort and were shipped to the ESE geotechnical laboratory for sieve analyses using ASTM D-422 and ASTM D-1140 methodologies. Table 3-1 summarizes the results of the sieve analyses, which are also included in Appendix F.

The subsurface soil encountered during this investigation and the previous investigation (Hunter/ESE, 1990) may be categorized into three general strata based on geologic and engineering characteristics.

Stratum I soils extend from the surface to depths of approximately 4 ft and consist of brown to yellow-red, fine to medium-grained, loose to medium-dense silty sand. The sand contains approximately 19 to 23 weight-percent particles finer than No. 200 mesh. The fines are generally nonplastic, and the soil is classified as silty sand (SM) according to the Unified Soil Classification System (USCS). Moisture contents in the Stratum I soils ranged from 10 to 13 percent. For a typical loose to medium-dense silty sand as found in this stratum, the estimated permeability is between 1×10^{-5} and 1×10^{-6} centimeters per second (cm/sec) (Peck, Hanson, and Thornburn, 1974).

Stratum II soils are present from approximately 4 to 10 ft-bls at most locations and consist of red to yellow-brown, medium to coarse-grained, loose to medium-dense clayey sand ranging in thickness from 17 to 22 ft. The sand contains approximately 23 to 43 weight-percent particles finer than No. 200 mesh. The fines are, in general, moderately plastic, and the soil is classified as clayey sand (SC) according to USCS. During the current investigation, low plasticity clay

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Table 3-1. Summary of Sieve Analysis, Wright AAFTA.

Sample ID	Depth (ft)	Passing % #200 Sieve	D60	D30	D10
WMW-4	12.0	15.0	---	---	---
WMW-5	12.0	16.0	0.23	0.154	---
WMW-6	13.0	19.0	---	---	---
WMW-7	40.0	25.0	0.11	0.079	0.0055

Note: --- = no data

Source: ESE

was observed in all the well and soil borings. The thickness of the clay varies across the site, and the clay was not observed in soil borings drilled in the previous field effort. Soil moisture contents in the clay ranged from 11 to 23 percent. For a typical loose to medium-dense clayey sand to sandy clay as found in this stratum, the estimated permeability is between 1×10^{-5} and 1×10^{-7} cm/sec (Peck, Hanson, and Thornburn, 1974). Using data from the grain-size curves of aquifer soils in the screened zone at WMW-5 and a formula for calculating the approximate hydraulic conductivity based on aquifer grain-size distributions (Bialas, 1970), the hydraulic conductivity of the Stratum II soils is approximately 4.8×10^{-3} cm/sec. Slug testing confirmed a conductivity of 9×10^{-4} cm/sec (1.9×10^{-3} ft/min). The calculations are included in Appendix E.

Stratum III soils consist of green-gray, silty, fine-grained, dense sand. The sand contains approximately 25 weight-percent of particles finer than No. 200 mesh. The fines are generally of low plasticity, and the soil is classified as silty sand (SM) in the USCS system. Approximately 28 ft of Stratum III sand was penetrated in well WMW-7. Based on field descriptions, this unit may be part of the Duplin Marl. The estimated permeability of this stratum is between 1×10^{-5} and 1×10^{-6} cm/sec (Peck, Hanson, and Thornburn, 1974). Using data from the grain-size curves of aquifer soils in the screened zone at WMW-7 and a formula for calculating the approximate hydraulic conductivity based on aquifer grain-size distributions (Peck, Hanson, and Thornburn, 1974), the hydraulic conductivity of the Stratum III soils is approximately 3.0×10^{-5} cm/sec. Slug testing revealed a conductivity of 4×10^{-5} cm/sec (8.3×10^{-5} ft/min). The calculations are included in Appendix E.

3.2 HYDRAULIC GRADIENT IN MARCH 1992

Water table elevations for the March 1992 field effort were calculated using the new survey data for the monitor wells. The data are summarized in Table 3-2. A water table contour map for the Wright AAFTA is presented in Figure 3-1 (The water level elevation in WMW-7 is not included in the contour because the well

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Table 3-2. Summary of Groundwater Elevations, March 1992, Wright AAFTA.

Well Number	NORTHING	EASTING	Top of Casing Elevation (ft-msl)	Depth to Water 3/92 (ft-toc)	Groundwater Elevation 3/92 (ft-msl)
WMW-1	688148.69	685368.21	49.39	6.43	42.96
WMW-2	688248.83	685268.58	49.62	6.37	43.25
WMW-3	688364.54	685362.09	50.74	7.29	43.45
WMW-4	688150.64	685263.33	48.91	5.95	42.96
WMW-5	688231.50	685364.62	50.00	7.00	43.00
WMW-6	688213.84	685531.23	49.65	6.10	43.55
WMW-7	688233.54	685337.62	49.89	6.92	42.97

Notes: ft-msl = feet mean sea level
ft-toc = feet below the top of casing

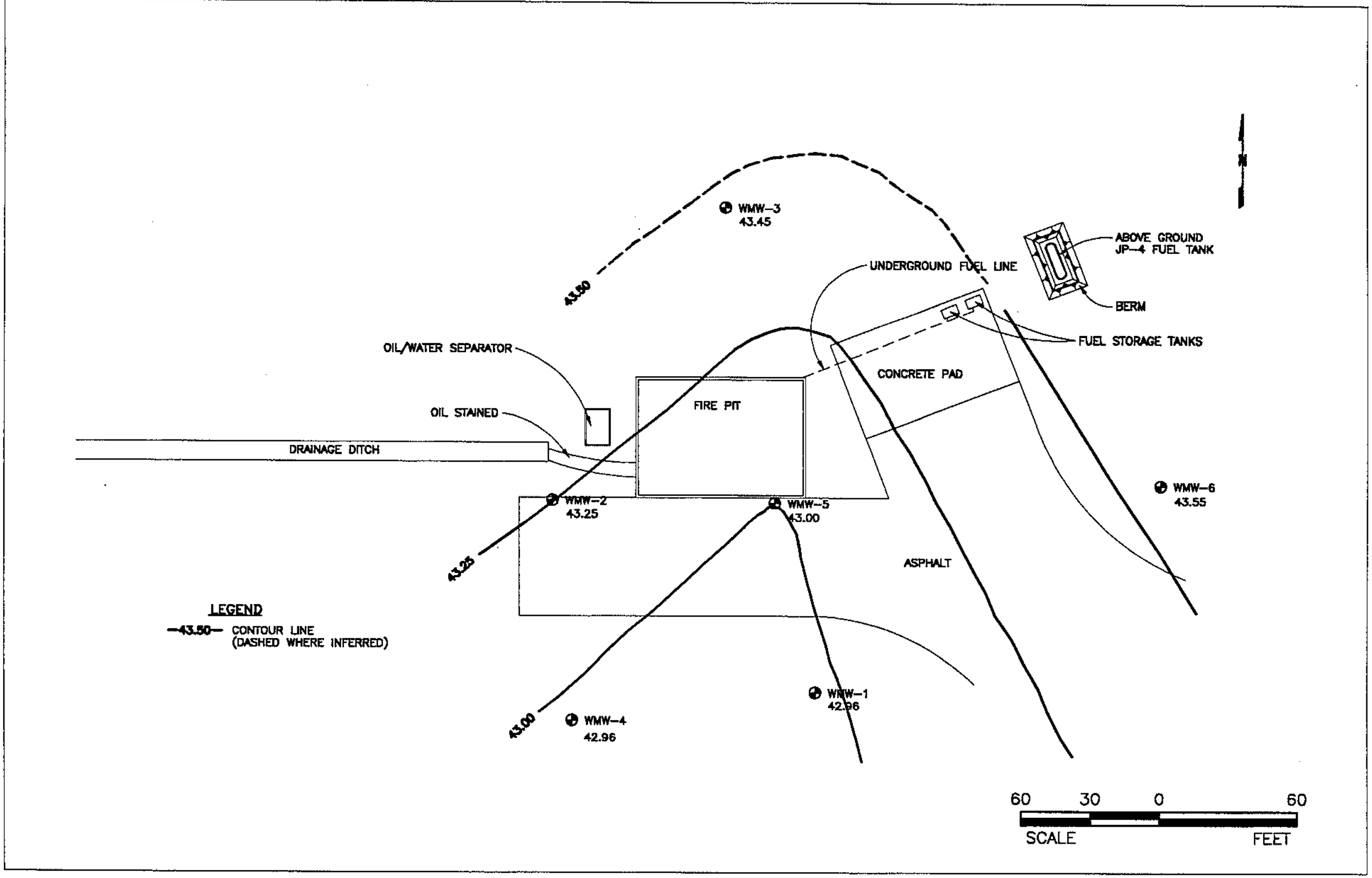

Figure 3-1
POTENTIOMETRIC SURFACE CONTOUR MAP, MARCH 1992
WRIGHT AAFTA
FORT STEWART, GEORGIA

SOURCE: ESE, 1991

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is screened at depth in the aquifer). The data show groundwater flow across the site is generally to the south, which is consistent with earlier data (Section 2.0).

Monitor wells WMW-5 and WMW-7 are located on the same edge of the fire training pit approximately 27 ft apart. WMW-5 is screened across the water table (3 to 15.5 ft-bls) and WMW-7 is screened at depth in the same aquifer (40 to 50 ft-bls). The elevation of the groundwater is almost identical in the two wells (7 ft-msl in WMW-5 and 6.92 ft-msl in WMW-7), indicating only 0.08 ft of head difference between the two wells. This suggests there is no significant vertical component to groundwater flow in the aquifer. Because the wells are not immediately adjacent to one another, it is not possible to confirm such a small difference in head between the upper and lower parts of the aquifer.

3.3 ANALYTICAL RESULTS AND VALIDATION

Samples of soil, sediment, and groundwater were collected and analyzed during this investigation. All samples were analyzed for the VOCs, metals, and PAHs listed in Table 3-3. The sample collection and analysis program is summarized in Table 3-4. The analytical results are presented included in Appendix J. Table 3-5 shows the concentrations of those parameters that were found in soils and sediments above detection limits, and Table 3-6 shows the concentrations of those parameters found in the groundwater above the detection limits.

The analytical data were validated by an ESE QA/QC specialist. The calculations and appropriate documentation for the analytical QA/QC are included in Appendix K.

3.4 CHEMICAL ANALYSES OF THE DECONTAMINATION SOURCE WATER

The water used for sampling and drilling equipment decontamination and mixing grout was obtained from a spigot in the vehicle wash area located approximately 1/4 mile from the site. A water sample (WRITW1*10) was obtained from this

Table 3-3. Summary of Analytes for Wright AAFTA

Analyte	Analyte
Petroleum Hydrocarbons	<u>VOCs (cont.)</u>
<u>Total Metals</u>	cis-1,3-Dichloropropene
Barium	trans-1,3-Dichloropropene
Cadmium	Ethylbenzene
Chromium	2-Hexanone
Lead	Methylene chloride
Silver	2-Methyl-2-pentanone (MIBK)
Arsenic	Styrene
Selenium	1,1,2,2-Tetrachloroethane
Mercury	Tetrachloroethene
<u>VOCs</u>	Toluene
Acetone	1,1,1-Trichloroethane
Benzene	1,1,2-Trichloroethane
Bromodichloromethane	Trichloroethene
Bromoform	Vinyl acetate
Bromomethane	Vinyl chloride
2-Butanone (MEK)	Xylenes (total, all isomers)
Carbon disulfide	<u>PAHs</u>
Carbon tetrachloride	Acenaphthene
Chlorobenzene	Acenaphthylene
Chloroethane	Anthracene
2-Chloroethyl vinyl ether	Benzo(a)anthracene
Chloroform	Benzo(b)fluoranthene
Chloromethane	Benzo(k)fluoranthene
Dibromochloromethane	Benzo(a)pyrene
1,2-Dichlorobenzene	Benzo(g,h,i)perylene
1,3-Dichlorobenzene	Chrysene
1,4-Dichlorobenzene	Dibenzo(a,h)anthracene
1,1-Dichloroethane	Fluoranthene
1,2-Dichloroethane	Fluorene
1,1-Dichloroethene	Indeno(1,2,3-c,d)pyrene
trans-1,2-Dichloroethene	Naphthalene
1,2-Dichloropropane	Phenanthrene
	Pyrene

Source: ESE.

Table 3-4. Sampling and Analytical Requirements for Wright AAFTA

	No. of Field Samples	No. of QC Samples Analyzed by ESE			No. of QC Samples Analyzed by USACE			Parameters			
		Replicate	Rinseate	Trip Blanks	Replicate	Rinseate	Trip Blanks	A	B	C	D
Soil	9	1	0	0	1	0	0	X	X	X	X
Groundwater	7	1	1	1	1	1	1	X	X	X	-
Sediment	2	1	-	0	-	-	-	-	-	-	-

Note: A = volatile organic compounds (SW 8240).
B = metals (As, Ba, Cd, Cr, Pb, Hg, Se, and Ag).
C = polynuclear aromatic hydrocarbons (SW 8270).
D = total volatile organics (PID).
QC = Quality Control.

A number of trip blanks will be shipped dependent on the number of coolers with volatiles shipped.

Source: ESE.

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Table 3-5. Analytical Parameters Detected in Soil/Sediment Samples in 1992, Wright AAFTA

PARAMETERS	UNITS	SOIL										SEDIMENT		
		PSB-1			PSB-2			PSB-3			PSB-3DUP	PSS-1	PSS-1DUP	PSS-2
		WS-1	WS-2	WS-3	WS-4	WS-5	WS-6	WS-7	WS-8	WS-9	WS-DUP	WSD-1	WSD-DUP	WSD-2
		0-3 FT.	5-7 FT.	8-10 FT.	0-4 FT.	5-7 FT.	8-10 FT.	4-6 FT.	5-7 FT.	8-10 FT.	4-6 FT.			
		03/09/92	03/09/92	03/09/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92
		16:30	16:40	16:50	07:20	07:30	07:40	08:30	08:40	08:50		09:30		08:30
1,1,1-TRICHL'ETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,1,2-TRICHL'ETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,1-DICHLOROETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,1-DICHLOROETHYLENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,2-DICHLOROBENZENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	<83.00	<82.00
1,2-DICHLOROETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,2-DICHLOROETHENE(TOTAL)	UG/KG	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,2-DICHLOROPROPANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
1,3-DICHLOROBENZENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	<83.00	<82.00
1,4-DICHLOROBENZENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	<83.00	<82.00
2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
ACENAPHTHENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	<83.00	<82.00
ACENAPHTHYLENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	<83.00	<82.00
ANTHRACENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	330.00	120.00
ARSENIC,SED	MG/KG-DRY	4.12	4.51	3.05	0.75	2.42	0.63	2.37	2.99	0.96	4.12	3.82	3.31	3.38
BARIUM,SED	MG/KG- DRY	15.40	12.90	10.30	25.90	12.60	11.40	18.00	11.20	9.47	16.00	37.20	24.70	13.40
BENZENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
BENZO(A)ANTHRACENE	UG/KG-DRY	<120.00	<120.00	<120.00	<110.00	<120.00	<120.00	<120.00	<120.00	<120.00	<110.00	1900.00	2700.00	2000.00

Table 3-5. Analytical Parameters Detected in Soil/Sediment Samples in 1992, Wright AAFTA, Continued, Page 2 of 4

PARAMETERS	UNITS	SOIL										SEDIMENT		
		PSB-1			PSB-2			PSB-3			PSB-3DUP	PSS-1	PSS-1DUP	PSS-2
		WS-1	WS-2	WS-3	WS-4	WS-5	WS-6	WS-7	WS-8	WS-9	WS-DUP	WSD-1	WSD-DUP	WSD-2
		0-3 FT.	5-7 FT.	8-10 FT.	0-4 FT.	5-7 FT.	8-10 FT.	4-6 FT.	5-7 FT.	8-10 FT.	4-6 FT.			
		03/09/92	03/09/92	03/09/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92
		16:30	16:40	16:50	07:20	07:30	07:40	08:30	08:40	08:50		09:30		08:30
BENZO(A)PYRENE	UG/KG-DRY	<160.00	<170.00	<170.00	<160.00	<170.00	<170.00	<160.00	<170.00	<160.00	<160.00	2800.00	2700.00	2200.00
BENZO(B)FLUORANTHENE	UG/KG-DRY	<120.00	<120.00	<120.00	<110.00	<120.00	<120.00	<120.00	<120.00	<120.00	<110.00	4200.00	4700.00	3700.00
BENZO(GHI)PERYLENE	UG/KG-DRY	<190.00	<190.00	<190.00	<180.00	<190.00	<190.00	<190.00	<190.00	<190.00	<180.00	3600.00	2000.00	1600.00
BENZO(K)FLUORANTHENE	UG/KG-DRY	<120.00	<120.00	<120.00	<110.00	<120.00	<120.00	<120.00	<120.00	<120.00	<110.00	1200.00	1200.00	1100.00
BROMODICHLOROMETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
BROMOFORM	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
BROMOMETHANE	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
CADMIUM,SED	MG/KG-DRY	1.61	<0.54	4.09	0.54	0.77	<0.56	1.64	2.12	0.56	1.96	2.21	2.26	0.78
CARBON DISULFIDE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
CARBON TETRACHLORIDE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
CHLOROBENZENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
CHLOROETHANE	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
CHLOROFORM	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
CHLOROMETHANE	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
CHROMIUM,SED	MG/KG-DRY	15.60	6.14	33.90	5.48	7.59	6.45	11.70	17.70	4.51	16.10	16.80	19.40	8.99
CHRYSENE	UG/KG-DRY	<120.00	<120.00	<120.00	<110.00	<120.00	<120.00	<120.00	<120.00	<120.00	<110.00	2500.00	2600.00	1900.00
CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
DIBEN(A,H)ANTHRACENE	UG/KG-DRY	<190.00	<190.00	<190.00	<180.00	<190.00	<190.00	<190.00	<190.00	<190.00	<180.00	<210.00	<190.00	320.00
DIBROMOCHLOROMETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90

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Table 3-5. Analytical Parameters Detected in Soil/Sediment Samples in 1992, Wright AAFTA, Continued, Page 3 of 4

PARAMETERS	UNITS	SOIL										SEDIMENT		
		PSB-1			PSB-2			PSB-3			PSB-3DUP	PSS-1	PSS-1DUP	PSS-2
		WS-1	WS-2	WS-3	WS-4	WS-5	WS-6	WS-7	WS-8	WS-9	WS-DUP	WSD-1	WSD-DUP	WSD-2
		0-3 FT.	5-7 FT.	8-10 FT.	0-4 FT.	5-7 FT.	8-10 FT.	4-6 FT.	5-7 FT.	8-10 FT.	4-6 FT.			
		03/09/92	03/09/92	03/09/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92
		16:30	16:40	16:50	07:20	07:30	07:40	08:30	08:40	08:50		09:30		08:30
DICHLOROBENZENE,TOTAL	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
DIETHYL ETHER	UG/KG-DRY	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00
ETHYLBENZENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
FLUORANTHENE	UG/KG-DRY	120.00	<84.00	<83.00	<78.00	<84.00	<83.00	100.00	<85.00	<82.00	<78.00	3400.00	6200.00	4600.00
FLUORENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	<83.00	<82.00
INDENO(1,2,3-CD) PYRENE	UG/KG-DRY	<190.00	<190.00	<190.00	<180.00	<190.00	<190.00	<190.00	<190.00	<190.00	<180.00	4000.00	2200.00	2000.00
LEAD,SED	MG/KG-DRY	7.17	12.20	11.70	<6.99	<7.02	<7.48	<6.98	8.35	<7.19	<6.96	15.40	7.92	<7.17
MERCURY,SED	MG/KG-DRY	<0.10	<0.10	<0.10	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10	<0.09	<0.11	<0.10	<0.10
METHYL ETHYL KETONE	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
METHYLENE CHLORIDE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
METHYLISOBUTYLKETONE	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
MOISTURE	%WET WT	14.10	16.30	15.40	9.70	16.50	16.00	14.60	17.20	14.70	10.00	25.10	15.40	14.70
NAPHTHALENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	140.00	<78.00	<93.00	<83.00	<82.00
PHENANTHRENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	<82.00	<85.00	<82.00	<78.00	<93.00	2100.00	760.00
PYRENE	UG/KG-DRY	<81.00	<84.00	<83.00	<78.00	<84.00	<83.00	99.00	<85.00	<82.00	<78.00	3300.00	5200.00	3700.00
SELENIUM,SED	MG/KG-DRY	0.32	0.48	0.31	<0.27	<0.29	<0.29	<0.29	0.38	<0.29	<0.27	<0.32	<0.28	<0.29
SILVER,SED	MG/KG-DRY	<0.77	<0.81	<0.83	<0.78	<0.79	<0.84	<0.78	<0.84	<0.81	<0.78	<0.88	<0.81	<0.80
TETRACHLOROETHENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
TOLUENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90

Table 3-5. Analytical Parameters Detected in Soil/Sediment Samples in 1992, Wright AAFTA, Continued, Page 4 of 4

PARAMETERS	UNITS	SOIL										SEDIMENT		
		PSB-1			PSB-2			PSB-3			PSB-3DUP	PSS-1	PSS-1DUP	PSS-2
		WS-1	WS-2	WS-3	WS-4	WS-5	WS-6	WS-7	WS-8	WS-9	WS-DUP	WSD-1	WSD-DUP	WSD-2
		0-3 FT.	5-7 FT.	8-10 FT.	0-4 FT.	5-7 FT.	8-10 FT.	4-6 FT.	5-7 FT.	8-10 FT.	4-6 FT.			
		03/09/92	03/09/92	03/09/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92
		16:30	16:40	16:50	07:20	07:30	07:40	08:30	08:40	08:50		09:30		08:30
TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90
TRICHLOROETHENE	UG/KG-DRY	8.40	<6.00	<5.90	12.00	<6.00	<6.00	<5.90	7.10	<5.90	<5.60	9.90	<5.90	40.00
TRICHLOROFLUOROMETHANE	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	10.00
VINYL CHLORIDE	UG/KG-DRY	<12.00	<12.00	<12.00	<11.00	<12.00	<12.00	<12.00	<12.00	<12.00	<11.00	<13.00	<12.00	<12.00
XYLENE,TOTAL	UG/KG-DRY	<5.80	<6.00	<5.90	<5.50	<6.00	<6.00	<5.90	<6.00	<5.90	<5.60	<6.70	<5.90	<5.90

Source: ESE.

Table 3-6. Analytical Parameters Detected in Groundwater Samples in 1992, Wright AAFTA

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-4	WMW-5	WMW-6	WMW-7	WMW-4DUP	WSOURCE	EQPBLK	TRPBLK	
		03/11/92	03/11/92	03/11/92	03/13/92	03/13/92	03/13/92	03/14/92	03/13/92	03/13/92	03/13/92	03/11/92	03/14/92
		15:15	15:30	15:45	09:40	10:40	08:45	09:45				18:00	
1,1 DICHLOROETHANE	UG/L	<2.50	<2.50	<2.50	<2.50	<5.00	<5.00	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
1,1 DICHLOROETHYLENE	UG/L	<3.20	<3.20	<3.20	<3.20	<6.40	<6.40	<3.20	<3.20	<3.20	<3.20	<3.20	<3.20
1,1,1 TRICHL'ETHANE	UG/L	<2.50	<2.50	<2.50	<2.50	<5.00	<5.00	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
1,1,2 TRICHL'ETHANE	UG/L	<2.80	<2.80	<2.80	<2.80	<5.60	<5.60	<2.80	<2.80	<2.80	<2.80	<2.80	<2.80
1,1,2,2 TETRACHLORO ETHANE	UG/L	<1.50	<1.50	<1.50	<1.50	<3.00	<3.00	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50
1,2 DICHLOROETHANE	UG/L	<2.50	<2.50	<2.50	<2.50	<5.00	<5.00	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
1,2 DICHLOROETHENE(TOTAL)	UG/L	<2.40	<2.40	<2.40	<2.40	<4.80	<4.80	<2.40	<2.40	<2.40	<2.40	<2.40	<2.40
1,2 DICHLOROPROPANE	UG/L	<2.00	<2.00	<2.00	<2.00	<4.00	<4.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
2 CHLOROETHYLVINYL ETHER	UG/L	<3.10	<3.10	<3.10	<3.10	<6.20	<6.20	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10
ACENAPHTHENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
ACENAPHTHYLENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
ANTHRACENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
ARSENIC,TOTAL	UG/L	<2.30	<2.30	<2.30	<2.30	<2.30	<2.30	3.70	<2.30	<2.30	<2.30	NRQ	NRQ
BARIUM,TOTAL	UG/L	36.00	15.20	20.40	61.90	23.90	33.80	129.00	58.20	7.30	<1.10	NRQ	NRQ
BENZENE	UG/L	4.70	<1.00	<1.00	<1.00	270.00	230.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
BENZO(A)ANTHRACENE	UG/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	NRQ	NRQ
BENZO(A)PYRENE	UG/L	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	NRQ	NRQ
BENZO(B)FLUORANTHENE	UG/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	NRQ	NRQ
BENZO(GHI)PERYLENE	UG/L	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	NRQ	NRQ
BENZO(K)FLUORANTHENE	UG/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	NRQ	NRQ
BROMODICHLOROMETHANE	UG/L	<2.20	<2.20	<2.20	<2.20	<4.40	<4.40	<2.20	<2.20	<2.20	<2.20	<2.20	<2.20
BROMOFORM	UG/L	<2.60	<2.60	<2.60	<2.60	<5.20	<5.20	<2.60	<2.60	<2.60	<2.60	<2.60	<2.60

Table 3-6. Analytical Parameters Detected in Groundwater Samples in 1992, Wright AAFTA, Continued, Page 2 of 3

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-4	WMW-5	WMW-6	WMW-7	WMW-4DUP	WSOURCE	EQPBLK	TRPBLK	
		03/11/92	03/11/92	03/11/92	03/13/92	03/13/92	03/13/92	03/14/92	03/13/92	03/13/92	03/13/92	03/11/92	03/14/92
		15:15	15:30	15:45	09:40	10:40	08:45	09:45				18:00	
BROMOMETHANE	UG/L	<3.50	<3.50	<3.50	<3.50	<7.00	<7.00	<3.50	<3.50	<3.50	<3.50	<3.50	<3.50
CADMIUM,TOTAL	UG/L	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40	NRQ	NRQ
CARBON DISULFIDE	UG/L	<4.40	<4.40	<4.40	<4.40	<8.80	<8.80	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40
CARBON TETRACHLORIDE	UG/L	<2.60	<2.60	<2.60	<2.60	<5.20	<5.20	<2.60	<2.60	<2.60	<2.60	<2.60	<2.60
CHLOROBENZENE	UG/L	<1.40	<1.40	<1.40	<1.40	<2.80	<2.80	<1.40	<1.40	<1.40	<1.40	<1.40	<1.40
CHLOROETHANE	UG/L	<8.20	<8.20	<8.20	<8.20	<16.00	<16.00	<8.20	<8.20	<8.20	<8.20	<8.20	<8.20
CHLOROFORM	UG/L	<2.50	<2.50	<2.50	<2.50	<5.00	<5.00	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
CHLOROMETHANE	UG/L	<4.40	<4.40	<4.40	<4.40	<8.80	<8.80	<4.40	<4.40	<4.40	<4.40	<4.40	<4.40
CHROMIUM,TOTAL	UG/L	<7.40	<7.40	<7.40	13.60	<7.40	<7.40	16.70	9.20	<7.40	<7.40	NRQ	NRQ
CHRYSENE	UG/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	NRQ	NRQ
CIS 1,3 DICHLORO PROPENE	UG/L	<2.00	<2.00	<2.00	<2.00	<4.00	<4.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
DIBEN'(A,H)ANTH'CENE	UG/L	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	NRQ	NRQ
DIBROMOCHLOROMETHANE	UG/L	<2.30	<2.30	<2.30	<2.30	<4.60	<4.60	<2.30	<2.30	<2.30	<2.30	<2.30	<2.30
DICHLOROBENZENE,TOT.	UG/L	<4.00	<4.00	<4.00	<4.00	<8.00	<8.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
DIETHYL ETHER, TOTAL	UG/L	<5.00	<5.00	<5.00	<5.00	<10.00	<10.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
ETHYLBENZENE	UG/L	<1.30	<1.30	<1.30	<1.30	76.00	6.70	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30
FLUORANTHENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
FLUORENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
INDENO(1,2,3 CD) PYRENE	UG/L	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	NRQ	NRQ
LEAD,TOTAL	UG/L	<63.80	<63.80	<63.80	<63.80	<63.80	<63.80	<63.80	<63.80	<63.80	<63.80	NRQ	NRQ
MERCURY,TOTAL	UG/L	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	NRQ	NRQ
METHYL ETHYL KETONE	UG/L	<10.00	<10.00	<10.00	<10.00	<20.00	<20.00	<10.00	<10.00	<10.00	<10.00	<10.00	<10.00

Table 3-6. Analytical Parameters Detected in Groundwater Samples in 1992, Wright AAFTA, Continued, Page 3 of 3

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-4	WMW-5	WMW-6	WMW-7	WMW-4DUP	WSOURCE	EQPBLK	TRPBLK	
		03/11/92	03/11/92	03/11/92	03/13/92	03/13/92	03/13/92	03/14/92	03/13/92	03/13/92	03/13/92	03/11/92	03/14/92
		15:15	15:30	15:45	09:40	10:40	08:45	09:45				18:00	
METHYL ISOBUT'KETONE	UG/L	<12.00	<12.00	<12.00	<12.00	<24.00	<24.00	<12.00	<12.00	<12.00	<12.00	<12.00	<12.00
METHYLENE CHLORIDE	UG/L	<6.40	<6.40	<6.40	<6.40	<13.00	<13.00	<6.40	<6.40	<6.40	<6.40	<6.40	<6.40
NAPHTHALENE	UG/L	1.10	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
PHENANTHRENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
PYRENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
SELENIUM,TOTAL	UG/L	<2.00	<2.00	<2.00	<2.00	3.50	<2.00	<2.00	<2.00	<2.00	<2.00	NRQ	NRQ
SILVER,TOTAL	UG/L	<6.10	<6.10	<6.10	<6.10	<6.10	<6.10	<6.10	<6.10	<6.10	<6.10	NRQ	NRQ
TETRACHLOROETHENE	UG/L	<1.90	<1.90	<1.90	<1.90	<3.80	<3.80	<1.90	<1.90	<1.90	<1.90	<1.90	<1.90
TOLUENE	UG/L	<1.70	<1.70	<1.70	<1.70	<3.40	<3.40	<1.70	<1.70	<1.70	<1.70	<1.70	<1.70
TRANS 1,3 DICHLORO PROPENE	UG/L	<1.60	<1.60	<1.60	<1.60	<3.20	<3.20	<1.60	<1.60	<1.60	<1.60	<1.60	<1.60
TRICHLOROETHENE	UG/L	<3.00	<3.00	<3.00	<3.00	<6.00	<6.00	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00
TRICHLOROFLUORO METHANE	UG/L	<4.60	<4.60	<4.60	<4.60	<9.20	<9.20	<4.60	<4.60	<4.60	<4.60	<4.60	<4.60
VINYL CHLORIDE	UG/L	<4.60	<4.60	<4.60	<4.60	<9.20	<9.20	<4.60	<4.60	<4.60	<4.60	<4.60	<4.60
XYLENES,TOTAL	UG/L	9.10	<3.70	<3.70	<3.70	170.00	300.00	<3.70	<3.70	<3.70	<3.70	<3.70	<3.70

Source: ESE.

spigot and analyzed for the same parameters as the site groundwater samples, with the addition of total and free chlorine (measured in the field using a Hach Spectrophotometer). The only parameter present in the sample above detection limits was barium, at a concentration of 7.3 micrograms per liter ($\mu g/L$).

3.5 QA SAMPLE RESULTS.

QA samples were obtained at the Wright AAFTA for soils, sediments, and groundwater samples as described in Section 2.0. The QA/QC samples for all sample matrices did not indicate any abnormal variations for the analyzed parameters. Therefore, the results of the sampling and analyses were not biased by improper decontamination or sample handling procedures, and the data are acceptable.

4.0 SIGNIFICANCE OF CONTAMINATION

The objective of this evaluation is to determine the relative significance of the residual concentrations of site-related chemicals detected in soil, sediment, and groundwater at the Wright AAFTA and to provide guidance to determine suitable levels of remedial action to support site closure, if required. The area considered for site closure is the fire training pit which consists of a fire pit and associated drainage ditch, an aboveground fuel storage tank on a concrete pad, an underground fuel line, an aboveground JP-4 fuel tank, and an oil/water separator. The chemicals considered in this evaluation include metals, VOCs, PAHs, and other semivolatile organic compounds (SVOCs) that are associated with the burning of fuels for fire training purposes.

The analysis of sampling results demonstrates whether residual contamination should be controlled, minimized or eliminated from post closure migration to groundwater, surface water, or the atmosphere to the extent necessary to protect the health of humans and environmental receptors. For a site to be certified for clean closure according to RCRA, the owner must comply with closure performance standards specified in 40 Code of Federal Regulations (CFR) Part 264.111/265.111 (EPA, 1987). Clean closure is achieved when the preliminary cleanup target (PCT) analysis indicates that residual contamination does not pose potential threats to human health or environmental receptors. PCTs are residual chemical concentrations that correspond to EPA-established health-based exposure limits, which are established in such a manner that post closure maintenance and/or monitoring is not required.

The PCT analysis is performed according to the RCRA Surface Impoundment Clean Closure Guidance Manual (EPA, 1987), the Health and Environmental Assessment methods presented in the RCRA Facility Investigation Manual (EPA, 1989a), and other supporting EPA documents and directives. The following analysis evaluates potential health threats associated with the site-related contaminants and establishes PCT concentrations.

The PCT concentrations are established by a 2-step process: (1) identify chemicals of concern (COCs), and (2) identify residual chemical concentrations that are sufficiently protective of public health and the environment. Safe residual chemical concentrations are applicable or relevant and appropriate requirements (ARARs) [i.e., maximum contaminant levels (MCLs)] or guidance levels (i.e., RCRA action levels). The objectives of the PCT analysis are as follows:

1. As described in the preamble to the proposed regulations, 40 CFR 265.228, published in the Federal Register on March 19, 1987, to achieve clean closure, the owner-operator of a surface impoundment is required "...to demonstrate that any hazardous constituents left in the subsoils will not cause unacceptable risks to human health or the environment." This evaluation will determine the acceptability of the potential risks posed to the human health and environmental receptors from individual contaminants assuming no remedial action occurs at the site.
2. The PCT analysis evaluates whether the current levels of metals, volatile organics, and semivolatile organics associated with fire training activities pose significant risk to human health and/or environmental receptors.
3. The PCT analysis provides an initial estimate of the closure requirements for the areas associated with fire training activities at the Wright AAFTA. In addition, PCTs are measures for estimating closure requirements in written closure plans, which must be submitted before determining the final cleanup targets (FCTs) in the soils and groundwater at the areas of concern. Also, PCTs can be used to develop an order-of-magnitude cost estimate for contaminated soil

removal and allow for a more precise soil removal cost estimate during closure with data generated during soil testing.

The results of the PCT analysis are presented in the following sections.

4.1 IDENTIFICATION OF COCs

COCs are those hazardous constituents that may have been generated, used, stored, disposed of, or otherwise managed at the facility and are detected in the treatment unit or surrounding environmental media. COCs are identified by examining historical records of wastes managed at the treatment unit, by conducting a comprehensive sampling of the wastes present at the treatment unit, and by examining the results of environmental samples collected at the site. To provide a preliminary assessment of the types of wastes generated, used, stored, or disposed of at the Wright AAFTA, historical information and records were reviewed.

4.2 EVALUATION OF SAMPLING RESULTS

Analytical data on soil, sediment, and groundwater constituents were obtained according to the sampling plan (ESE, 1992) to further characterize wastes disposed of at the fire training area. Four adjacent areas associated with fire training activities and one surface drainage area were addressed in the sampling investigation. These are the following:

Fire Training Area:

- Fire pit
- Aboveground fuel storage tanks (on concrete pad)
- Underground fuel line
- Oil/water separator

Drainage Area:

Drainage ditch

Three site investigations have been performed at the Wright AAFTA. The first investigation was performed by USAEHA in March 1987, the second by Hunter/ESE in February 1990, and the third by ESE in March 1992 (the current study). The results of these investigations are evaluated in the development of PCT levels for individual contaminants to determine if site contamination may pose potential health threats to humans and/or environmental receptors.

4.2.1 PCT ANALYSIS OF INDIVIDUAL CONTAMINANTS

PCTs for soil/sediment and groundwater are concentration-based values that are derived from EPA-established health-based exposure limits. The residual concentrations of each chemical detected at the site were evaluated for potential carcinogenic and systemic (noncarcinogenic) health effects by comparing the detected environmental concentrations to EPA-established exposure limits (ARARs or health-based values).

In general, PCTs were established for soil/sediment and groundwater as presented in the RCRA RFI Guidance Manual (EPA, 1989a). For soil/sediment, PCTs were derived using EPA-accepted oral soil exposure parameters (EPA, 1989b) and EPA-verified reference doses (RfDs) for threshold (noncarcinogenic, systemic) effects. PCTs for nonthreshold (carcinogenic) effects were derived using EPA-accepted oral soil exposure parameters and EPA-verified cancer slope factors (CSFs) and assume a risk level of 10^{-6} for the Class A and B carcinogens detected at the site (EPA, 1989a). For a screening analysis, only oral exposure was considered in developing PCTs. At high concentrations, some contaminants will cause at least skin irritation at the point of contact; however, for many contaminants, toxicity occurs after they pass through certain barriers (e.g., the wall of the gastrointestinal tract or the skin itself) enter the circulatory system and gain access to various organ systems of the body (EPA, 1989). In addition, because of the chemical forms in which metals are usually found in soils (e.g., salts, ligand, and chelate complexes), the concern is with ingestion rather than with dermal contact (EPA, 1989). In the event that PCTs are exceeded, additional exposure pathways (i.e., dermal and inhalation exposure) may be considered in developing FCTs, if deemed necessary. A list of soil/sediment chemicals of concern with the reference doses (RfDs), cancer slope factors (CSFs), and PCTs is provided in Table 4-1.

For groundwater chemicals, the PCT was set at the MCL developed by the EPA Office of Drinking Water. Carcinogenic and noncarcinogenic PCTs for chemicals without an MCL were derived using EPA-accepted oral groundwater exposure parameters and EPA-verified RfDs and CSFs, respectively. As with soil/sediment, a risk level of 10^{-6} was assumed for the Class A and B carcinogens (EPA, 1989). A list of groundwater chemicals of concern with their RfDs, CSFs, and PCTs is presented in Table 4-2 and an explanation of the EPA carcinogen (weight-of-evidence) classes is presented in Table 4-3.

A comparison of site-specific chemical concentrations and individual PCTs is presented in the following sections. Because the sampling plan was designed to identify the COCs, only a limited number of samples (often one or two) were collected at each area of interest. Therefore, in comparing the site results to PCTs, the comparison evaluates the relationship of the maximum detected concentration at each area and the PCT.

4.2.1.1 Soil/Sediment Data and PCTs

The concentrations of each chemical detected in soil and sediment at the site were evaluated for potential carcinogenic and systemic (noncarcinogenic) health effects by comparing the concentrations to PCTs. For soil and sediment, PCTs were derived based on human oral exposure assumptions (EPA, 1989b) and the

Table 4-1. Soil/Sediment PCTs for Parameters Detected at Wright AAFTA

Chemical	RfD (mg/kg/day)	Systemic PCT (a) (mg/kg)	CSF (mg/kg/day)-1	WoE	Carcinogenic PCT (b) (mg/kg)
INORGANICS					
Arsenic	0.001	80	1.75	A	0.4
Barium	0.05	4,000	NA	--	ND
Cadmium	0.001	80	ND	B1	ND
Chromium, total*	0.005	400	NA	--	ND
Lead	ND	500 **	ND	B2	ND
Mercury	0.0003	24	NA	--	ND
Selenium	0.005	400	NA	--	ND
PAHs					
Anthracene	0.3	24,000	NA	--	ND
Benz(a)anthracene	ND	ND	0.58 +	B2	1.2
Benzo(a)pyrene	ND	ND	5.8	B2	0.12
Benzo(b)fluoranthene	ND	ND	0.58 +	B2	1.2
Benzo(ghi)perylene	ND	2,400 ++	NA	--	ND
Benzo(k)fluoranthene	ND	ND	0.58 +	B2	1.2
Chrysene	ND	ND	0.058 +	B2	12
Dibenz(ah)anthracene	ND	ND	5.8 +	--	0.12
Fluoranthene	0.04	3,200	NA	--	ND
Indeno(1,2,3-cd)pyrene	ND	ND	0.58 +	B2	1.2
Naphthalene	0.004	320	NA	--	ND
Phenanthrene	ND	2,400 ++	NA	--	ND
Pyrene	0.03	2,400	NA	--	ND
MISC. SEMIVOLATILE ORGANICS					
Bis(2-ethylhexyl) phthalate	0.02	1,600	0.014	B2	50
VOLATILE ORGANICS					
Methylene chloride	0.06	4,800	0.0075	B2	93
Toluene	0.2	16,000	NA	--	ND
Trichloroethene	ND	ND	0.011 c	B2	64
Trichlorofluoromethane	0.3	24,000	NA	--	ND

Note:
NA = not applicable.
ND = not determined.
RfD = oral reference dose; an estimate of a daily exposure level for the human population (including sensitive subpopulations), that is likely to be without an appreciable risk of deleterious effects during a lifetime.
CSF = cancer slope factor; is the upper-bound probability of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen. The reported value is an upper 95-percent confidence limit on the probability of response per unit intake of a chemical over a lifetime, converting estimated intakes directly to incremental risk.
WoE = weight-of-evidence for a chemical to be classified as an oral human carcinogen.
PAH = polycyclic aromatic hydrocarbon.
mg/kg/day = milligrams per kilogram per day.
mg/kg = milligrams per kilogram.

(a) Systemic soil criteria = RfD (mg/kg/day) x 16 (kg) / 200 (mg/day) / 1E-06 (kg/mg).
(b) Carcinogenic soil criteria = 1E-06 / CSF [(mg/kg/day)-1] x 70 (kg) / 100 (mg/day) / 1E-06 (kg/mg)
(c) The CSF for trichloroethene has been removed from IRIS pending reevaluation of its carcinogenic potential in humans.

*Assumes chromium is present as the more potent hexavalent species.
**Interim cleanup level established by EPA (1991).
+Interim Region IV Guidance on Toxicity Equivalency Factor (TEF) methodology for carcinogenic PAHs based on each compounds relative potency to the potency of benzo(a)pyrene (EPA, February 1992). The following TEFs were used to convert the CSF for benzo(a)pyrene to an equivalent CSF for the particular carcinogenic PAH: benz(a)anthracene = 0.1, benzo(b)fluoranthene = 0.1, benzo(k)fluoranthene (0.1), chrysene (0.01), dibenz(ah)anthracene = 1.0, and indeno(1,2,3-cd)pyrene = 0.1.
++No RfD is available for this PAH; the RfD for the most potent non-naphthalene PAH (pyrene) was used for comparison.

Source: ESE.

Table 4-2. Groundwater PCTs for Parameters Detected at Wright AAFTA

Chemical	RfD (mg/kg/day)	Systemic PCT (a) (ug/L)	CSF (mg/kg/day)-1	Weight of Evidence	Carcinogenic PCT (b) (ug/L)	MCL (ug/L)	
INORGANICS							
Arsenic	0.001	MCL	1.75	A	MCL	50	
Barium	0.05	MCL	NA	–	NA	1,000	c
Chromium, total*	0.005	MCL	NA	–	NA	50	c
Lead	ND	MCL	ND	B2	ND	15	d
Selenium	0.005	MCL	NA	–	NA	10	c
PAHs							
Naphthalene	0.003	105	NA	–	NA	ND	
VOLATILE ORGANICS							
Benzene	0.02	MCL	0.029	A	MCL	5	
Ethylbenzene	0.1	MCL	NA	–	NA	700	
Xylenes, total	2	70,000	NA	–	NA	ND	

Note:
NA = not applicable.
ND = not determined.
RfD = oral reference dose; an estimate of a daily exposure level for the human population (including sensitive subpopulations), that is likely to be without an appreciable risk of deleterious effects during a lifetime (EPA, 1989b).
CSF = cancer slope factor; is the upper-bound probability of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen (EPA, 1989b). The reported value is an upper 95-percent confidence limit on the probability of response per unitintake of a chemical over a lifetime, converting estimated intakes directly to incremental risk (EPA, 1989b).
MCL = EPA maximum contaminant level established under the Safe Drinking Water Act (unless otherwise specified).
PAH = polycyclic aromatic hydrocarbon.
mg/kg/day = milligrams per kilogram per day.
ug/L = micrograms per liter.
L/day = liters per day.

(a) Concentration in drinking water derived from the oral reference dose (RfD) and assumes that a healthy 70-kilogram adult ingests 2 L/day of water (EPA, 1989).
[concentration = oral RfD (mg/kg/day) x 70 (kg) x 1000 (ug/mg) / 2 (L/day)]
(b) Concentration corresponding to an upper-bound increased lifetime cancer risk of 1E-06.
[concentration = 1E-06 x 70 (kg) x 1000 (ug/mg) / slope factor (mg/kg/day)-1 x 2 (L/day)]
(c) Georgia State MCL (more stringent than federal MCL).
(d) 56 FR 26460 (June 7, 1991). This "action level," when measured in the 90th percentile at the consumers tap, triggers initiation of corrosion control studies and treatment requirements. Effective December 7, 1992.

*Assumes chromium is present as the more potent hexavalent species.

Source: ESE.

Table 4-3. Weight-of-Evidence Categories for Potential Carcinogens

EPA Category	Description of Group	Description of Evidence
Group A	Human carcinogen	Sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer
Group B1	Probable human carcinogen	Limited evidence of carcinogenicity in humans from epidemiologic studies
Group B2	Probable human carcinogen	Sufficient evidence of carcinogenicity in animals but inadequate data in humans
Group C	Possible human carcinogen	Limited evidence of carcinogenicity in animals
Group D	Not classified	Inadequate evidence of carcinogenicity in animals
Group E	No evidence of carcinogenicity in humans	No evidence of carcinogenicity in at least two adequate animal tests or in both epidemiologic and animal studies

Source: IRIS, 1992.

oral RfDs and CSFs as presented in the RCRA RFI Guidance Manual (EPA, 1989a), and relevant EPA toxicological databases and documents (Table 4-1). The maximum concentrations of the chemicals detected in soil and sediment, and appropriate PCTs, are given in Tables 4-4 and 4-5, respectively. A description of the relative significance of the soil and sediment analytical results for the areas sampled at the Wright AAFTA is presented in the following paragraphs.

Fire Pit--Nine soil samples were collected by USAEHA in 1987 from four 10-ft-deep borings (BH-1, BH-2, BH-3, and BH-4) at the perimeter of the pit. In 1990, Hunter/ESE sampled four additional 10-ft-deep borings, three at the perimeter of the pit (WSB-2, WSB-3, and WSB-4) and one adjacent to the upgradient well (WSB-1). The 1987 samples were obtained from the borings at the surface (0 to 1 ft-bls) and at depth (4 to 10 ft-bls), while the 1990 samples were collected in the boreholes between 6 to 10 ft-bls.

As shown in Table 4-4, the majority of inorganic and organic constituents were found to be below PCT levels and within the background ranges observed for inorganics in soils southwest of Savannah, Georgia (Shacklette and Boerngen, 1984) [or below detection limits (BDL)]. Exceptions are discussed in the following paragraphs.

Arsenic was detected above its carcinogenic PCT in every sample except WSB-2 (8 to 10 ft-bls). Most of the values are within the regional background range for arsenic, indicating that the arsenic levels may be representative of background conditions. Only a sample from BH-1 (9 to 10 ft-bls) had an arsenic level exceeding the regional background range.

Lead was detected in the 1987 surface sample (0 to 1 ft) from BH-4 at a level exceeding the EPA interim cleanup level and the regional background level. Lead

Table 4-4. Comparison of Maximum Soil Concentrations Detected at Wright AAFTA* to PCTs

Chemical	PCT (mg/kg)		Regional Background (mg/kg)	Fire Pit (mg/kg)		Downgradient: South of Fire Pit (mg/kg)	Oil/Water Separator (mg/kg)	Underground Fuel Line (mg/kg)	Aboveground Fuel Storage Tank (mg/kg)	Exceedance of PCT
	Systemic Effects	Carcinogenic Effects	Southeastern Georgia (a)	BH-1, BH-2, BH-3, BH-4	WSB-2, WSB-3, WSB-4	WSB-1	PSB-1	PSB-2	PSB-3	
INORGANICS										
Arsenic	80	0.4	***<0.1 - 6.5***	***16***	***4.59***	BDL	***4.51***	***2.42***	***4.12***	1,2
Barium	4,000	NA	10 - 200	15.5	8.83	8.28	15.4	25.9	18	
Cadmium	80	NA	NA	BDL	BDL	BDL	4.09	0.77	2.12	
Chromium, total**	400	NA	1.0 - 20	17.5	18.9	9.58	33.9	7.59	17.7	3
Lead	500 ***	NA	<10 - 10	***608***	10.8	10.9	12.2	BDL	8.35	3,4
Mercury	24	NA	<0.01 - 0.032	0.4	BDL	BDL	BDL	BDL	BDL	3
Selenium	400	NA	<0.1 - 0.5	BDL	0.531	BDL	0.485	BDL	0.387	3
PAHs										
Benz(a)anthracene	ND	1.2 +	NA	***2***	BDL	BDL	BDL	BDL	BDL	1
Benzo(a)pyrene	ND	0.12	NA	***1.108***	BDL	BDL	BDL	BDL	BDL	1
Fluoranthene	3,200	NA	NA	5.1	BDL	BDL	0.12	BDL	0.1	
Indeno(1,2,3-cd)pyrene	ND	1.2 +	NA	0.5	BDL	BDL	BDL	BDL	BDL	
Naphthalene	320	NA	NA	BDL	BDL	BDL	BDL	BDL	0.14	
Phenanthrene	2,400 ++	NA	NA	1.2	BDL	BDL	BDL	BDL	BDL	
Pyrene	2,400	NA	NA	BDL	BDL	BDL	BDL	BDL	0.099	
MISC. SEMIVOLATILE ORGANICS										
Bis(2-ethylhexyl) phthalate	1,600	50	NA	2.5	BDL	BDL	BDL	BDL	BDL	
VOLATILE ORGANICS										
Methylene chloride	4,800	93	NA	BDL	0.0034	0.0039	BDL	BDL	BDL	
Toluene	16,000	ND	NA	BDL	0.033	0.022	BDL	BDL	BDL	
Trichloroethene	ND	64	NA	BDL	BDL	BDL	0.0084	0.012	0.0071	

Table 4-4. Comparison of Maximum Soil Concentrations Detected at Wright AAFTA* to PCTs (Continued, Page 2 of 2)

Note: ND = not determined.
NA = not applicable.
BDL = below detection limit.
mg/kg = milligrams per kilogram.

(a) Average metal concentration in soils southwest of Savannah, Georgia (Shacklette and Boerngen, 1984).
(1) Some site levels exceed carcinogenic PCT (highlighted in table).
(2) Regional background value exceeds carcinogenic PCT (highlighted in table).
(3) Some site levels exceed regional background but are within PCT.
(4) Site level exceeds noncarcinogenic PCT (highlighted in table).

*Soil samples were collected in 1987 (BH), 1990 (WSB), and 1992 (PSB).
**Assumes that chromium is present as the more potent hexavalent species.
***Interim cleanup level established by EPA (1991).
+Interim Region IV Guidance on Toxicity Equivalency Factor (TEF) methodology for carcinogenic PAHs based on each compounds relative potency to the potency of benzo(a)pyrene (EPA, February 1992). The following TEFs were used to convert the CSF for benzo(a)pyrene to an equivalent CSF for the particular carcinogenic PAH: benz(a)anthracene = 0.1 and indeno(1,2,3-cd)pyrene = 0.1.
++No RfD is available for this PAH; the RfD for the most potent non-naphthalene PAH (pyrene) is used for comparison, only.

Source: ESE.

Table 4-5. Comparison of Maximum Sediment Concentrations at Wright AAFTA* to PCTs

Chemical	PCT (mg/kg) Systemic Effects	PCT (mg/kg) Carcinogenic Effects	Regional Background (mg/kg) Southeastern Georgia (a)	Drainage Ditch (mg/kg) PSS-1	Drainage Ditch (mg/kg) PSS-2	Exceedance of PCT
INORGANICS						
Arsenic	80	0.4	*<0.1 - 6.5*	***3.82***	***3.38***	1,2
Barium	4,000	NA	10 - 200	37.2	13.4	
Cadmium	80	NA	NA	2.26	0.786	
Chromium, total**	400	NA	1.0 - 20	19.4	8.99	
Lead	500 ***	NA	<10 - 10	15.4	BDL	3
PAHs						
Anthracene	24,000	NA	NA	0.33	0.12	
Benz(a)anthracene	ND	1.2 +	NA	***2.7***	***2***	1
Benzo(a)pyrene	ND	0.12	NA	***2.8***	***2.2***	1
Benzo(b)fluoranthene	ND	1.2 +	NA	***4.7***	***3.7***	1
Benzo(ghi)perylene	2,400 ++	NA	NA	3.6	1.6	
Benzo(k)fluoranthene	ND	1.2 +	NA	1.2	1.1	
Chrysene	ND	12 +	NA	2.6	1.9	
Dibenz(ah)anthracene	ND	0.12 +	NA	BDL	***0.32***	1
Fluoranthene	3,200	NA	NA	6.2	4.6	
Indeno(1,2,3-cd)pyrene	ND	1.2 +	NA	***4***	***2***	1
Phenanthrene	2,400 ++	NA	NA	2.1	0.76	
Pyrene	2,400	NA	NA	5.2	3.7	
VOLATILE ORGANICS						
Trichloroethene	ND	64	NA	0.0099	0.04	
Trichlorofluoromethane	24,000	NA	NA	BDL	0.01	

Note: ND = not determined.
NA = not applicable.
BDL = below detection limit.
mg/kg = milligrams per kilogram.

(a) Average metal concentration in soils southwest of Savannah, Georgia (Shacklette and Boerngen, 1984).
(1) Some site levels exceed carcinogenic PCT (highlighted in table).
(2) Regional background value exceeds carcinogenic PCT (highlighted in table).
(3) Site level exceeds regional background but is within PCT.

*All sediment samples (PSS) were collected in 1992.
**Assumes that chromium is present as the more potent hexavalent species.
***Interim cleanup level established by EPA (1991).
+Interim Region IV Guidance on Toxicity Equivalency Factor (TEF) methodology for carcinogenic PAHs based on each compounds relative potency to the potency of benzo(a)pyrene (EPA, February 1992). The following TEFs were used to convert the CSF for benzo(a)pyrene to an equivalent CSF for the particular carcinogenic PAH: benz(a)anthracene = 0.1, benzo(b)fluoranthene = 0.1, benzo(k)fluoranthene (0.1), chrysene (0.01), dibenz(ah)anthracene = 1.0, and indeno(1,2,3-cd)pyrene = 0.1.
++No RfD is available for this PAH; the RfD for the most potent non-naphthalene PAH (pyrene) was used for comparison.

Source: ESE.

concentrations in the remaining 1987 samples and in WSB-3 (6 to 10 ft-bls) exceeded the regional background value for lead but are below the PCT.

Concentrations of mercury in all of the 1987 samples and selenium in WSB-3 (6 to 10 ft-bls) exceeded background values but are below their respective PCTs.

The concentrations of two PAHs [benz(a)anthracene and benzo(a)pyrene] in the 1987 samples also exceed the carcinogenic PCTs. Note that the only positive detections of PAHs were in the 9- to 10-ft-bls sample from BH-1 taken in 1987.

Aboveground Fuel Storage Tanks on Concrete Pad

In 1992, three soil samples were collected from a 10-ft deep boring (PSB-3) at the aboveground fuel storage tanks located northeast of the fire pit. The samples were collected at depths of 0 to 4.6, 5 to 7, and 8 to 10 ft-bls. The maximum arsenic concentration detected in these samples was within the regional background range (Table 4-4). All of the arsenic concentrations exceed the carcinogenic PCT developed for arsenic. Because the arsenic levels are similar across the site and are within the regional background range, the arsenic does not appear to be site-related.

Underground Fuel Line

In 1992, three soil samples were collected from a 10-ft-deep boring (PSB-2) near the underground fuel line northeast of the fire pit. The samples were collected at depths of 0 to 4, 5 to 7, and 8 to 10 ft-bls. The maximum arsenic concentration detected in the samples exceeds the carcinogenic PCT developed for arsenic (Table 4-4). Because the arsenic levels are within the regional background range, the arsenic does not appear to be site-related.

Oil/Water Separator

In 1992, three soil samples were collected from a 10-ft-deep boring (PSB-1) near the oil/water separator located adjacent to the west edge of the fire pit. The samples were collected at depths of 0 to 3, 5 to 7, and 8 to 10 ft-bls. The maximum arsenic concentration detected in the samples exceeds the carcinogenic PCT developed for arsenic (Table 4-4). Because the arsenic levels are within the regional background range, the arsenic does not appear to be site related.

Drainage Ditch

In 1992, two sediment samples were collected from the ditch draining the west side of the fire pit. One sample (PSS-1) was collected approximately 40 ft from the concrete outfall, and the second sample (PSS-2) was collected approximately 150 ft downstream of PSS-1. The arsenic concentration detected in each of the samples exceeds the carcinogenic PCT developed for arsenic (Table 4-5) but is within the regional background range, indicating that the reported values are representative of regional levels and are not site-related. The lead concentration reported in PSS-1 exceeds the regional background range but is well below the interim cleanup level for lead.

The concentrations of the PAHs benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(ah)anthracene, and indeno(1,2,3-cd)pyrene in the sediment samples exceed their respective carcinogenic PCTs. Sediment PCTs are based on soil ingestion parameters, which are typically very conservative when applied to sediment exposure.

4.2.1.2 Groundwater Data and PCTs

As previously noted, the MCL, proposed MCL, or EPA-enforced action level is the applicable PCT for groundwater. In the absence of these values for specific chemicals, PCTs were derived based on human oral exposure assumptions and oral RfDs and CSFs, as presented in the RCRA RFI Guidance Manual (EPA, 1989)

(Table 4-2) and relevant EPA toxicological databases and documents. The maximum concentrations of the chemicals detected in groundwater, along with their appropriate PCTs, are given in Table 4-6. A discussion of the relative significance of the groundwater analytical results for the areas sampled at the Wright AAFTA is presented in the following paragraphs.

Samples were collected from three monitor wells in 1990: WMW-1, located south of the fire pit; WMW-2, located adjacent to the drainage ditch west of the fire pit; and WMW-3, located north (upgradient) of the fire pit. In 1992, samples were collected from the same three wells and four new wells: WMW-4, located south of the fire pit and west of WMW-1; WMW-5 and WMW-7, both located adjacent to the southern edge of the fire pit; and WMW-6, located southeast and across the asphalt from the fire pit. All of the wells are screened across the water table with the exception of WMW-7, which is screened at depth in the same aquifer.

The concentrations of lead in the 1990 samples from WMW-1 and WMW-2 exceeded the EPA action level (Table 4-6). The detection limit for lead in the 1992 samples was 63.8 μg/L, so it is impossible to know whether the 1992 lead concentrations were above or below the action level. The chromium levels detected in the 1990 samples from WMW-1 and WMW-2 and the barium concentration reported in the 1990 sample from WMW-1 exceeded the state of Georgia MCLs for these metals. Both of these metals were below the MCLs or the detection limits in the 1992 samples from the same wells. The only other chemical measured in groundwater above its PCT was benzene, which was detected at approximately 50 times its MCL in WMW-5 and WMW-6. The benzene concentrations detected during the 1992 sample effort are presented in Figure 4-1.

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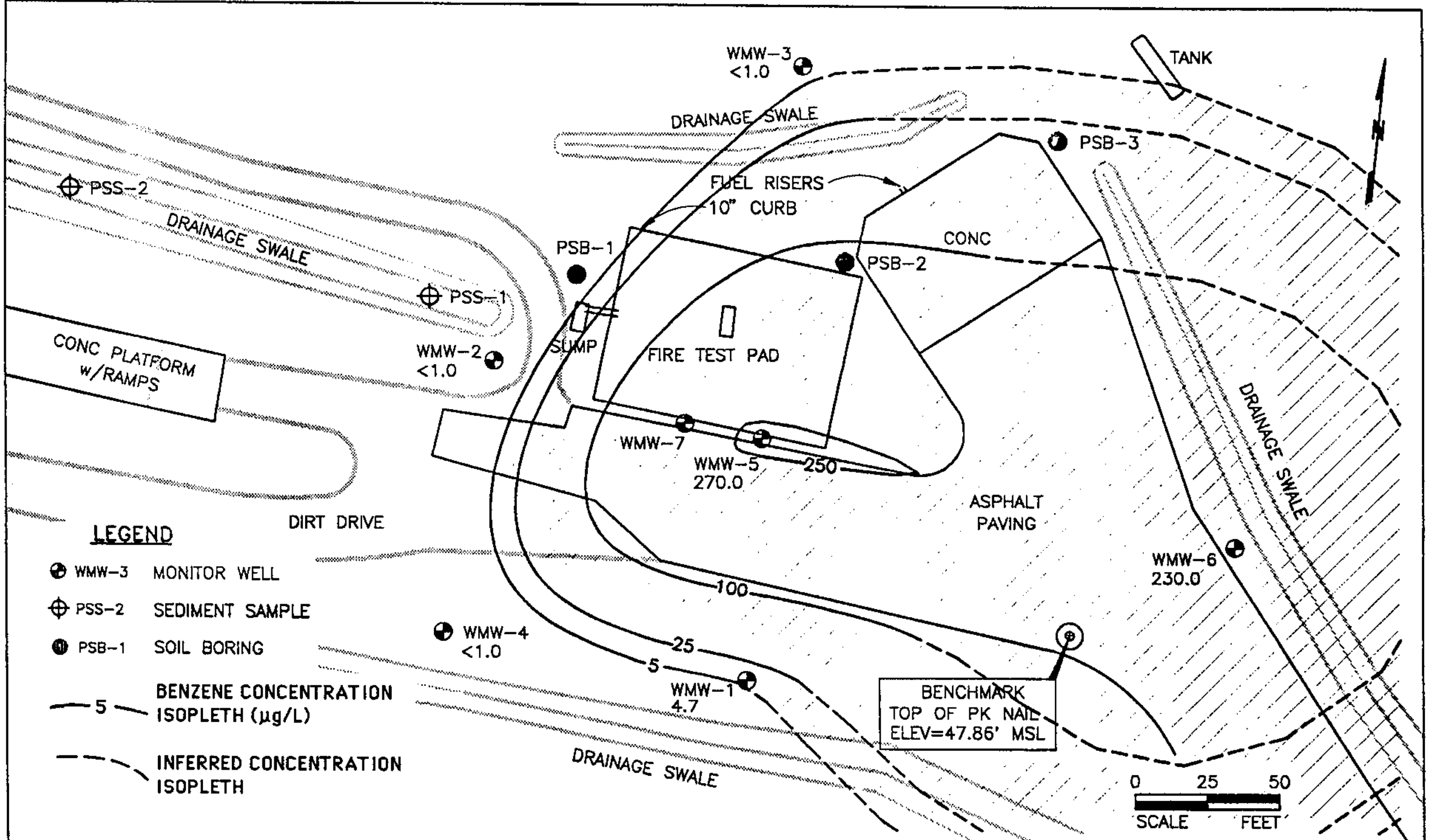

Figure 4-1
1992 BENZENE CONCENTRATIONS (ug/L)
IN SURFICIAL GROUNDWATER (0–15 FT BLS)
WRIGHT AAFTA
FORT STEWART, GEORGIA
SOURCE: ESE, 1992

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A CILCORP Company

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Table 4-6. Comparison of Groundwater Data for Wright AAFTA to PCTs

Chemical	PCTs (ug/L)			Background: North of Fire Pit (ug/L)		Fire Pit (ug/L)		Downgradient (South) of Fire Pit (ug/L)			Downgradient (Southeast) of Fire Pit (ug/L)	Drainage Ditch (ug/L)		Exceedance of PCT
	Systemic Effects (a)	Carcinogenic Effects (b)	MCL	WMW-3		WMW-5	WMW-7	WMW-1		WMW-4	WMW-6	WMW-2		
				1990	1992	1992	1992	1990	1992	1992	1992	1990	1992	
INORGANICS														
Arsenic	MCL	MCL	50	BDL	BDL	BDL	3.7	8.5	BDL	BDL	BDL	BDL	BDL	
Barium	MCL	NA	1,000 c	28.5	20.4	23.9	129	***1,630***	36	61.9	33.8	148	15.2	1
Chromium, total*	MCL	NA	50 c	13.7	BDL	BDL	16.7	***329***	BDL	13.6	BDL	***54.4***	BDL	1
Lead	MCL	ND	15 d	BDL	BDL	BDL	BDL	***391***	BDL	BDL	BDL	***82.8***	BDL	1
Selenium	MCL	NA	10 c	3.4	BDL	3.5	BDL	4.6	BDL	BDL	BDL	2.5	BDL	
PAHs														
Naphthalene	105	NA	ND	BDL	BDL	BDL	BDL	BDL	1.1	BDL	BDL	BDL	BDL	
VOLATILE ORGANICS														
Benzene	MCL	MCL	5	BDL	BDL	***270***	BDL	BDL	4.7	BDL	***230***	BDL	BDL	1
Ethylbenzene	MCL	NA	700	BDL	BDL	76	BDL	BDL	BDL	BDL	6.7	BDL	BDL	
Xylenes, total	70,000	NA	ND	BDL	BDL	170	BDL	BDL	9.1	BDL	300	BDL	BDL	

Note: MCL = EPA maximum contaminant level established under the Safe Drinking Water Act (unless otherwise specified).
NA = not applicable.
ND = not determined.
BDL = below detection limit.
ug/L = micrograms per liter.

(a) Concentration in drinking water derived from the oral reference dose (RfD) and assumes that a healthy 70-kilogram adult ingests 2 L/day of water (EPA, 1989b).
[concentration = oral RfD (mg/kg/day) x 70 (kg) x 1000 (ug/mg) / 2 (L/day)]
(b) Concentration corresponding to an upper-bound increased lifetime cancer risk of 1E-06.
[concentration = 1E-06 x 70 (kg) x 1000 (ug/mg) / slope factor (mg/kg/day)-1 x 2 (L/day)]
(c) Georgia State MCL (more stringent than federal MCL).
(d) 56 FR 26460 (June 7, 1991). This "action level," when measured in the 90th percentile at the consumers tap, triggers initiation of corrosion control studies and treatment requirements; effective as of December 7, 1992.
(1) Some site samples exceed MCL (highlighted in table).

*Assumes that chromium is present as the more potent hexavalent species.

Source: ESE.

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4.3 SUMMARY OF PCT ANALYSIS FOR INDIVIDUAL CONTAMINANTS

4.3.1 SOIL/SEDIMENT

Arsenic was detected in nearly all of the soil samples from the site at levels exceeding the carcinogenic PCT; however, the majority of concentrations are within the range typically observed in soils from the region (southwest of Savannah, Georgia), indicating that the reported values are not site-related. The only sample with a reported arsenic concentration exceeding background was the 9 to 10 ft-bls sample from BH-1. Not only does this detection appear to be an isolated case (arsenic levels in other borings from the same depth were within background), but the horizon at which it was detected is not readily available for exposure unless the site is excavated.

In addition to arsenic, two PAHs were detected above their carcinogenic PCTs in a deep (9 to 10 ft-bls) 1987 sample from the fire pit, while a surface soil sample from the same year showed a lead concentration exceeding the EPA interim cleanup level.

Sediment samples from the drainage ditch also revealed concentrations of arsenic that exceed the carcinogenic PCT; however, these levels are within the regional background range and do not appear to be site-related. Several PAHs were also detected at levels that exceed their respective carcinogenic PCT's (based on soil ingestion, which is conservative for sediment exposure).

4.3.2 GROUNDWATER

The concentrations of barium and chromium detected in a downgradient well (WMW-1) exceed state of Georgia MCLs, and the lead level detected in the same well is above the EPA action level. Chromium and lead were also detected above PCTs in the well adjacent to the drainage ditch (WMW-2). The only other chemical measured in groundwater above its PCT was benzene, detected at approximately 50 times its MCL in WMW-5 (perimeter of fire pit) and WMW-6 (downgradient of fire pit).

Based on conversations with the fire station personnel who were onsite during several of our monthly visits, the fire training area was still in service. The recently charred grass near the fire training area also indicated the current use of the fire-training pad. The elevated levels of benzene detected during this round of sampling and analyses may be a direct result of a new spill occurring since the performance of the previous groundwater sampling and analyses.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Data collected indicate that the SVOC contamination in the drainage swale sediments and the benzene in groundwater present a potential threat to human health and/or the environment. The extent of lateral and vertical environmental contamination at Wright AAFTA has not currently been defined. Specifically, the southern and eastern limits of groundwater contamination are not known, and it is also possible that semivolatile contamination may have leached from the drainage swale sediments into adjacent and underlying soils. Despite the lack of definition of the extent of the problem, it is possible to proceed with a closure/remediation plan using the existing data. Such a closure plan will have to be performance based, requiring the closure construction contractor to perform further sampling as an initial phase of the closure. The quantity of sediments to be removed, the volume of groundwater requiring treatment, and the total time required for groundwater remediation can only be estimated on an order-of-magnitude basis using available data.

5.1 SOIL

Only two samples contained contaminant concentrations above the PCTs. The first sample was collected from the surface overflow area west of the AAFTA pad and contained slightly elevated levels of lead. This can easily be removed when the SVOC-contaminated sediments in the adjacent drainage swale are removed. The second sample was taken from the south edge of the pad at a depth of 10 ft-bls and contained only elevated levels of SVOCs in excess of PCTs. The soil PCTs were based on an assumed exposure pathway of ingestion, which is not probable, given the location. No corresponding SVOC contamination of groundwater was detected in the adjacent monitor well (WMW-5) (15-ft total depth) or in WMW-7 (50-ft total depth). One of two explanations may explain this isolated hit. The contamination may have migrated downward from the surface and is not a part of a larger mass of contaminated soil, in which case, no further action would be required as a risk to human health or the environment is not present. Or, the contamination may be the edge of a large mass of soil contamination originating from the drainage swale, in which case remediation would be addressed in conjunction with the drainage swale sediments.

5.2 SEDIMENT

Drainage swale sediments were slightly contaminated with SVOCs. The possibility that this contamination may have migrated laterally and downward into adjacent soils and the extent to which contamination may have spread from this source is unknown. A closure plan can be developed without the need for further data by requiring the closure contractor to perform confirmatory sampling during sediment excavation to determine the soil contamination extent around and beneath the drainage swale.

5.3 GROUNDWATER

Benzene contamination south and east of the pad does present a potential threat to human health and the environment. A performance-based closure will require additional groundwater sampling to determine the extent of the benzene plume so that a groundwater recovery system can be adequately sized.

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APPENDIX A

CLIMATIC DATA FROM WRIGHT ARMY AIRFIELD WEATHER STATION

DAILY CLIMATOLOGICAL DATA

MONTH: July YEAR: 1991 DETACHMENT: 21 SQUADRON: 5

DAY OF THE MONTH	MAX TEMP	MIN TEMP	MEAN TEMP	DEG. DAYS HEAT	DEG. DAYS COOL	PRECIP WATER EQUIV TOTAL	PRECIP SNOW TOTAL	MAX WINDS	RS	SA	SP	L
1	90	75	82.5	0	17.5	0.00	0.00	120/14	0	24	2	0
2	92	75	83.5	0	18.5	0.00	0.00	080/10	0	24	0	0
3	95	76	85.5	0	20.5	T	0.00	310/17	1	23	5	0
4	89	79	84	0	19	0.05	0.00	270/16	0	24	5	0
5	93	75	84	0	19	0.62	0.00	250/14	0	24	5	0
6	88	74	81	0	16	0.30	0.00	210/16	1	23	7	0
7	93	74	83.5	0	18.5	T	0.00	290/13	1	23	3	0
8	94	74	84	0	19	0.00	0.00	270/14	1	23	5	0
9	89	72	80.5	0	15.5	2.45	0.00	220/22	1	23	11	0
10	92	72	82	0	17	T	0.00	130/12	0	24	8	0
11	95	74	84.5	0	19.5	T	0.00	230/14	1	23	3	0
12	94	75	84.5	0	19.5	T	0.00	150/12	0	24	4	0
13	98	77	87.5	0	22.5	0.00	0.00	210/11	0	24	0	0
14	97	75	86	0	21	T	0.00	150/14	1	23	5	0
15	87	73	80	0	15	T	0.00	190/16	1	23	6	0
16	89	70	79.5	0	14.5	0.79	0.00	070/19	2	22	15	0
17	88	70	79	0	14	0.12	0.00	190/28	3	21	9	0
18	87	71	79	0	14	1.75	0.00	260/29	1	23	6	0
19	88	75	81.5	0	16.5	T	0.00	140/11	1	23	2	0
20	90	74	82	0	17	0.25	0.00	250/22	0	24	3	0
21	89	72	80.5	0	15.5	0.04	0.00	030/19	1	23	7	0
22	94	72	83	0	18	0.00	0.00	240/12	0	24	0	0
23	95	76	85.5	0	20.5	0.03	0.00	190/11	0	24	3	0
24	96	76	86	0	21	0.00	0.00	330/14	0	24	4	0
25	93	73	83	0	18	0.00	0.00	250/13	0	24	0	0
26	93	73	83	0	18	0.00	0.00	250/13	0	24	0	0
27	89	73	81	0	16	0.37	0.00	360/18	1	23	4	0
28	89	74	81.5	0	16.5	0.00	0.00	220/11	0	24	0	0
29	89	75	82	0	17	T	0.00	260/16	0	24	6	0
30	89	74	81.5	0	16.5	3.98	0.00	200/17	2	22	15	0
31	81	62	71.5	0	6.5	0.62	0.00	270/16	2	22	19	0
EXTREME:	98	62	80			3.98		260/29				
MEAN:	91.1	73.5	82.3			0.37						
TOTAL:				0	537.5	11.37	0		21	723	162	0

NUMBER OF DAYS WITH--

1. 90 deg.F or above:	17	4.) or = to .01" PRECIP:	13	7.) or = to 1" SNOWFALL:	0
2. 32 deg.F or below:	0	5.) or = to .10" PRECIP:	10	8. PRECIPITATION DAYS :	22
3. 0 deg.F or below:	0	6.) or = to .50" PRECIP:	6	9. THUNDERSTORM DAYS :	21

DAILY CLIMATOLOGICAL DATA

MONTH: August YEAR: 1991 DETACHMENT: 21 SQUADRON: 5

DAY OF THE MONTH	MAX TEMP	MIN TEMP	MEAN TEMP	DEG. DAYS HEAT	DEG. DAYS COOL	PRECIP WATER EQUIV TOTAL	PRECIP SNOW TOTAL	MAX WINDS	RS	SA	SP	L
1	84	75	79.5	0	14.5	1.52	0.00	150/29	4	20	29	0
2	83	76	79.5	0	14.5	0.38	0.00	220/18	0	24	18	0
3	89	76	82.5	0	17.5	0.00	0.00	280/13	0	24	6	0
4	94	74	84	0	19	0.00	0.00	250/10	0	24	0	0
5	94	75	84.5	0	19.5	T	0.00	180/14	0	24	4	0
6	91	74	82.5	0	17.5	0.00	0.00	160/12	1	23	1	0
7	91	75	83	0	18	0.00	0.00	180/13	0	24	0	0
8	96	78	87	0	22	0.03	0.00	250/15	0	24	3	0
9	94	76	85	0	20	0.00	0.00	280/14	0	24	0	0
10	92	75	83.5	0	18.5	0.37	0.00	290/24	1	23	6	0
11	91	73	82	0	17	0.43	0.00	350/24	1	23	9	0
12	89	73	81	0	16	0.00	0.00	290/09	1	23	9	0
13	92	73	82.5	0	17.5	0.06	0.00	220/22	1	23	4	0
14	91	73	82	0	17	0.80	0.00	210/17	1	23	5	0
15	83	72	77.5	0	12.5	0.00	0.00	320/11	0	24	4	0
16	88	71	79.5	0	14.5	0.00	0.00	030/11	0	24	0	0
17	91	72	81.5	0	16.5	0.00	0.00	040/11	0	24	0	0
18	92	72	82	0	17	0.00	0.00	310/13	0	24	2	0
19	93	76	84.5	0	19.5	0.00	0.00	220/22	0	24	0	0
20	92	71	81.5	0	16.5	0.25	0.00	280/13	3	21	3	0
21	88	64	76	0	11	0.00	0.00	270/12	0	24	0	0
22	87	70	78.5	0	13.5	0.00	0.00	090/10	0	24	0	0
23	87	72	79.5	0	14.5	0.00	0.00	060/13	0	24	0	0
24	84	74	79	0	14	0.75	0.00	120/13	2	22	7	0
25	90	75	82.5	0	17.5	0.21	0.00	130/15	2	22	4	0
26	85	74	79.5	0	14.5	1.53	0.00	090/08	1	23	13	0
27	83	74	78.5	0	13.5	0.24	0.00	030/09	1	23	15	0
28	84	73	78.5	0	13.5	0.26	0.00	090/12	0	24	12	0
29	86	74	80	0	15	0.09	0.00	110/12	1	23	7	0
30	87	74	80.5	0	15.5	0.00	0.00	250/12	0	24	2	0
31	91	71	81	0	16	0.00	0.00	350/07	0	24	0	0
EXTREME:	96	64	80			1.53		040/19				
MEAN:	89.1	73.4	81.2			0.22						
TOTAL:				0	503.5	6.92	0		20	724	163	0

NUMBER OF DAYS WITH--

1. 90 deg.F or above:	16	4.) or = to .01" PRECIP:	14	7.) or = to 1" SNOWFALL:	0
2. 32 deg.F or below:	0	5.) or = to .10" PRECIP:	11	8. PRECIPITATION DAYS :	15
3. 0 deg.F or below:	0	6.) or = to .50" PRECIP:	4	9. THUNDERSTORM DAYS :	15

DAILY CLIMATOLOGICAL DATA

DETACHMENT: 21 SQUADRON: 5

MONTH: September YEAR: 1991

DAY OF THE MONTH	MAX TEMP	MIN TEMP	MEAN TEMP	DEG. DAYS HEAT	DEG. DAYS COOL	PRECIP WATER EQUIV TOTAL	PRECIP SNOW TOTAL	MAX WINDS	RS	SA	SP	L
1	94	71	82.5	0	17.5	0.00	0.00	080/14	2	22	0	0
2	81	73	77	0	12	0.01	0.00	080/24	0	24	9	0
3	85	70	77.5	0	12.5	0.00	0.00	050/17	0	24	2	0
4	88	72	80	0	15	0.00	0.00	100/16	0	24	0	0
5	87	71	79	0	14	T	0.00	070/11	0	24	2	0
6	91	76	83.5	0	18.5	0.00	0.00	120/10	0	24	2	0
7	91	73	82	0	17	0.40	0.00	100/13	2	22	5	0
8	85	71	78	0	13	0.10	0.00	070/17	0	24	0	0
9	86	67	76.5	0	11.5	0.00	0.00	070/16	0	24	0	0
10	88	72	80	0	15	T	0.00	070/13	0	24	4	0
11	90	70	80	0	15	0.00	0.00	350/10	0	24	0	0
12	93	72	82.5	0	17.5	0.00	0.00	170/10	0	24	0	0
13	92	74	83	0	18	0.00	0.00	140/06	0	24	0	0
14	94	76	85	0	20	0.00	0.00	160/08	0	24	0	0
15	94	74	84	0	19	0.00	0.00	140/06	0	24	0	0
16	91	74	82.5	0	17.5	0.00	0.00	120/08	1	23	3	0
17	90	73	81.5	0	16.5	0.00	0.00	130/12	0	24	5	0
18	88	72	80	0	15	0.00	0.00	180/10	0	24	2	0
19	89	73	81	0	16	0.55	0.00	140/15	0	24	6	0
20	76	65	70.5	0	5.5	0.01	0.00	360/15	2	22	8	0
21	74	64	69	0	4	0.00	0.00	020/16	0	24	1	0
22	79	63	71	0	6	0.00	0.00	030/13	0	24	0	0
23	87	65	76	0	11	0.00	0.00	030/13	0	24	0	0
24	87	72	79.5	0	14.5	0.00	0.00	050/11	0	24	3	0
25	81	70	75.5	0	10.5	0.21	0.00	190/16	2	22	7	0
26	76	61	68.5	0	3.5	0.00	0.00	260/11	0	24	3	0
27	80	60	70	0	5	0.00	0.00	010/13	0	24	0	0
28	79	56	67.5	0	2.5	0.00	0.00	060/22	0	24	0	0
29	81	63	72	0	7	0.00	0.00	060/24	0	24	0	0
30	83	67	75	0	10	0.00	0.00	070/26	0	24	0	0
31			0	65	0					24		
EXTREME:	94	56	28			0.55		070/26				
MEAN:	86.0	69.3	77.7			0.04						
TOTAL:				65	380	1.28	0		9	735	62	0

NUMBER OF DAYS WITH--

1. 90 deg.F or above: 10
2. 32 deg.F or below: 0
3. 0 deg.F or below: 0
4.) or = to .01" PRECIP: 6
5.) or = to .10" PRECIP: 4
6.) or = to .50" PRECIP: 1
7.) or = to 1" SNOWFALL: 0
8. PRECIPITATION DAYS : 7
9. THUNDERSTORM DAYS : 5

DAILY CLIMATOLOGICAL DATA

MONTH: October YEAR: 1991 DETACHMENT: 21 SQUADRON: 5

DAY OF THE MONTH	MAX TEMP	MIN TEMP	MEAN TEMP	DEG. DAYS HEAT	DEG. DAYS COOL	PRECIP WATER EQUIV TOTAL	PRECIP SNOW TOTAL	MAX WINDS	RS	SA	SP	L
1	83	67	75	0	10	T	0.00	070/25	1	23	5	0
2	73	66	69.5	0	4.5	0.50	0.00	010/25	3	21	20	0
3	78	65	71.5	0	6.5	0.11	0.00	150/10	0	24	4	0
4	80	65	72.5	0	7.5	0.00	0.00	090/07	0	24	0	0
5	82	73	77.5	0	12.5	0.43	0.00	240/28	1	23	14	0
6	79	60	69.5	0	4.5	0.05	0.00	310/19	0	24	7	0
7	66	49	57.5	7.5	0	0.00	0.00	010/23	0	24	0	0
8	73	45	59	6	0	0.00	0.00	050/25	0	24	0	0
9	79	57	68	0	3	T	0.00	050/24	0	24	3	0
10	80	64	72	0	7	T	0.00	040/16	0	24	2	0
11	81	59	70	0	5	0.00	0.00	250/19	0	24	3	0
12	84	58	71	0	6	0.00	0.00	250/19	0	24	0	0
13	80	51	65.5	0	0.5	0.00	0.00	310/15	0	24	0	0
14	80	56	68	0	3	0.00	0.00	120/15	0	24	0	0
15	83	63	73	0	8	0.75	0.00	280/25	1	23	10	0
16	71	49	60	5	0	0.00	0.00	360/17	0	24	6	0
17	71	46	58.5	6.5	0	0.00	0.00	320/17	0	24	0	0
18	77	48	62.5	2.5	0	0.00	0.00	200/10	0	24	0	0
19	80	48	64	1	0	0.00	0.00	300/10	1	23	2	0
20	78	53	65.5	0	0.5	0.00	0.00	100/17	0	24	4	0
21	72	59	65.5	0	0.5	0.00	0.00	060/15	1	23	7	0
22	81	57	69	0	4	0.00	0.00	060/15	0	24	2	0
23	83	65	74	0	9	0.00	0.00	090/18	0	24	2	0
24	83	67	75	0	10	0.11	0.00	120/27	0	24	2	0
25	81	70	75.5	0	10.5	T	0.00	070/19	0	24	4	0
26	81	70	75.5	0	10.5	T	0.00	070/19	0	24	4	0
27	81	67	74	0	9	T	0.00	070/21	0	24	3	0
28	82	59	70.5	0	5.5	0.00	0.00	090/16	0	24	0	0
29	71	60	65.5	0	0.5	T	0.00	040/18	0	24	3	0
30	71	50	60.5	4.5	0	0.00	0.00	030/16	0	24	0	0
31	78	49	63.5	1.5	0	0.00	0.00	290/14	0	24	0	0
EXTREME:	84	45	64.5			0.75		120/27				
MEAN:	78.1	58.5	68.3			0.06						
TOTAL:				34.5	138	1.95	0		8	736	107	0

NUMBER OF DAYS WITH--

1. 90 deg.F or above:	0	4.) or = to .01" PRECIP:	6	7.) or = to 1" SNOWFALL:	0
2. 32 deg.F or below:	0	5.) or = to .10" PRECIP:	5	8. PRECIPITATION DAYS :	13
3. 0 deg.F or below:	0	6.) or = to .50" PRECIP:	2	9. THUNDERSTORM DAYS :	2

DAILY CLIMATOLOGICAL DATA

DETACHMENT: 21 SQUADRON: 5

MONTH: NOVEMBER YEAR: 1991

DAY OF THE MONTH	MAX TEMP	MIN TEMP	MEAN TEMP	DEG. DAYS HEAT	DEG. DAYS COOL	PRECIP WATER EQUIV TOTAL	PRECIP SNOW TOTAL	MAX WINDS	RS	SA	SP	L
1	76	55	65.5	0	0.5	T	0.00	150/13	0	24	0	0
2	74	49	61.5	3.5	0	0.00	0.00	290/15	0	24	0	0
3	57	46	51.5	13.5	0	T	0.00	290/12	1	23	5	0
4	58	38	48	17	0	0.00	0.00	300/16	0	24	0	0
5	60	35	47.5	17.5	0	0.00	0.00	350/12	0	24	0	0
6	63	47	55	10	0	0.00	0.00	010/15	1	23	3	0
7	67	43	55	10	0	0.00	0.00	350/14	0	24	0	0
8	61	37	49	16	0	T	0.00	360/20	0	24	5	0
9	49	40	44.5	20.5	0	1.48	0.00	350/21	1	23	4	0
10	49	42	45.5	19.5	0	ET	0.00	290/14	1	23	8	0
11	63	38	50.5	14.5	0	0.00	0.00	300/14	0	24	0	0
12	65	38	51.5	13.5	0	0.00	0.00	060/08	0	24	0	0
13	63	42	52.5	12.5	0	0.00	0.00	010/11	0	24	0	0
14	72	39	55.5	9.5	0	0.00	0.00	130/09	0	24	0	0
15	77	49	63	2	0	0.00	0.00	210/12	0	24	0	0
16	78	51	64.5	0.5	0	0.00	0.00	270/13	0	24	8	0
17	72	54	63	2	0	0.00	0.00	050/23	0	24	4	0
18	71	57	64	1	0	0.00	0.00	040/17	0	24	1	0
19	78	58	68	0	3	0.00	0.00	120/18	0	24	0	0
20	81	60	70.5	0	5.5	T	0.00	190/17	0	24	1	0
21	79	68	73.5	0	8.5	0.00	0.00	180/20	0	24	0	0
22	71	60	65.5	0	0.5	0.00	0.00	230/19	0	24	3	0
23	71	59	65	0	0	T	0.00	220/08	0	24	7	0
24	56	33	44.5	20.5	0	0.00	0.00	300/25	0	24	0	0
25	54	28	41	24	0	0.00	0.00	300/13	0	24	0	0
26	56	30	43	22	0	0.00	0.00	360/13	0	24	0	0
27	59	38	48.5	16.5	0	0.00	0.00	050/15	0	24	0	0
28	69	43	56	9	0	0.00	0.00	020/12	0	24	0	0
29	79	53	66	0	1	0.00	0.00	110/18	0	24	0	0
30	78	56	67	0	2	T	0.00	130/11	0	24	4	0
31			0	65	0					24		
EXTREME:	81	28	54.5			1.48		300/25				
MEAN:	66.9	46.2	56.5			0.05						
TOTAL:				340	21	1.48		0	4	740	53	0

NUMBER OF DAYS WITH--

1. 90 deg.F or above: 0
2. 32 deg.F or below: 2
3. 0 deg.F or below: 0
4.) or = to .01" PRECIP: 1
5.) or = to .10" PRECIP: 1
6.) or = to .50" PRECIP: 1
7.) or = to 1" SNOWFALL: 0
8. PRECIPITATION DAYS : 8
9. THUNDERSTORM DAYS : 0

DAILY CLIMATOLOGICAL DATA

DETACHMENT: 21 SQUADRON: 5

MONTH: **DECEMBER** YEAR: 1991

DAY OF THE MONTH	MAX TEMP	MIN TEMP	MEAN TEMP	DEG. DAYS HEAT	DEG. DAYS COOL	PRECIP WATER EQUIV TOTAL	PRECIP SNOW TOTAL	MAX WINDS	RS	SA	SP	L
1	80	67	73.5	0	8.5	T	0.00	170/11	1	23	20	0
2	76	67	71.5	0	6.5	T	0.00	200/17	3	21	16	0
3	79	49	64	1	0	0.63	0.00	290/24	4	20	15	0
4	55	38	46.5	18.5	0	0.00	0.00	290/26	0	24	0	0
5	50	32	41	24	0	0.00	0.00	070/15	0	24	0	0
6	59	43	51	14	0	0.00	0.00	030/11	0	24	0	0
7	72	42	57	8	0	0.00	0.00	280/13	1	23	6	0
8	74	50	62	3	0	0.00	0.00	170/08	0	24	0	0
9	77	62	69.5	0	4.5	0.00	0.00	210/14	0	24	0	0
10	72	55	63.5	1.5	0	0.06	0.00	070/15	1	23	4	0
11	67	48	57.5	7.5	0	0.00	0.00	030/14	0	24	0	0
12	72	50	61	4	0	0.00	0.00	080/14	0	24	2	0
13	80	61	70.5	0	5.5	T	0.00	180/13	0	24	4	0
14	71	60	65.5	0	0.5	T	0.00	240/17	1	23	15	0
15	58	37	47.5	17.5	0	0.00	0.00	320/18	0	24	0	0
16	54	30	42	23	0	0.00	0.00	340/16	0	24	0	0
17	62	29	45.5	19.5	0	0.00	0.00	270/14	0	24	0	0
18	67	38	52.5	12.5	0	0.00	0.00	280/18	0	24	0	0
19			0	65	0					24		
20			0	65	0					24		
21			0	65	0					24		
22			0	65	0					24		
23			0	65	0					24		
24			0	65	0					24		
25			0	65	0					24		
26			0	65	0					24		
27			0	65	0					24		
28			0	65	0					24		
29			0	65	0					24		
30			0	65	0					24		
31			0	65	0					24		
EXTREME:	80	29	54.5			0.63		290/26				
MEAN:	68.1	47.7	57.9			0.04						
TOTAL:				999	25.5	0.69	0		11	733	82	0

NUMBER OF DAYS WITH--

1. 90 deg.F or above:	0	4.) or = to .01" PRECIP:	2	7.) or = to 1" SNOWFALL:	0
2. 32 deg.F or below:	3	5.) or = to .10" PRECIP:	1	8. PRECIPITATION DAYS :	6
3. 0 deg.F or below:	0	6.) or = to .50" PRECIP:	1	9. THUNDERSTORM DAYS :	0

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APPENDIX B

USAEHA HAZARDOUS WASTE STUDY, MARCH 1987

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CONSERVARE SALUTEM

AEHA

UNITED STATES ARMY ENVIRONMENTAL HYGIENE AGENCY

ABERDEEN PROVING GROUND, MD 21010-5422

HAZARDOUS WASTE STUDY NO. 37-26-0127-88
INVESTIGATION OF SOIL CONTAMINATION
FORT STEWART, GEORGIA
24-31 MARCH 1987

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DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO ATTENTION OF

HSHB-ME-SE

18 NOV 1987

MEMORANDUM FOR: Commander in Chief, Forces Command, ATTN: FCEN-FDE, Fort Gillem, Forest Park, GA 30305-6000

SUBJECT: Hazardous Waste Study No. 37-26-0127-88, Investigation of Soil Contamination, Fort Stewart, Georgia, 24-31 March 1987

EXECUTIVE SUMMARY

The purpose and a summary of the major conclusions and recommendations of the enclosed report follow:

a. Purpose. Fort Stewart requested assistance from the U.S. Army Environmental Hygiene Agency to evaluate the existence of contamination originating from three fire training areas, and four Explosive Ordnance Disposal (EOD) sites on Fort Stewart and Hunter Army Airfield. The information generated from this study will aid the installation in identifying the existence of any environmental problems.

b. Conclusions. The study crew found no significant contamination at any of the EOD areas or the fire training area located near Zouck's Cemetery or Wright Army Airfield. However, the subsurface soil is contaminated with high concentrations of lead and other compounds related to JP-4 at the fire training area supporting Hunter Army Airfield. The fire training areas and EOD sites are Solid Waste Management Units (SWMU's) and should be included in the installation SWMU List.

c. Recommendations.

(1) To ensure regulatory compliance, the following recommendations are made. Initiate a study to evaluate the extent of contamination at Hunter Airfield to determine possible corrective action requirements; Prepare closure and post closure plans for all permitted EOD sites.

(2) To ensure good environmental engineering practice, the following recommendations are made: Produce a standing operating procedure on fire training to ensure an environmentally sound operation; prepare a plan for final disposition of all the fire training areas, including the one near Zouck's Cemetery, EOD 2, and EOD-3.

Paul R. Thies

PAUL R. THIES
MAJ, MS
Chief, Waste Disposal Engineering Division

Encl

CF:
HQDA(DASG-PSP) (wo/encl)
HQDA(DAEN-ZCF-U/DAEN-ZCE) (w/encl)
Cdr, Fort Stewart, ATTN: AFZT DEN-E (w/encl)
Cdr, FORSCOM, ATTN: FCMD-PC (4 cy) (w/encl)
Cdr, MEDDAC, Ft Stewart, ATTN: PVNTMED Svc (2 cy) (w/encl)
Cdr, DDEAMC, ATTN: PVNTMED Svc (w/encl)
Cdr, USAEHA Fld Spt Actv, Ft McPherson (w/encl)

Hazardous Waste Study No. 37-26-0127-88, Ft Stewart, GA, 24-31 Mar 87

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DEPARTMENT OF THE ARMY
U.S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO
ATTENTION OF

HSHB-ME-SE

HAZARDOUS WASTE STUDY NO. 37-26-0127-88
INVESTIGATION OF SOIL CONTAMINATION
FORT STEWART, GEORGIA
24-31 MARCH 1987

I. AUTHORITY. Letter, FORSCOM, AFEN-FDE, 13 June 1986, Subject: USAEHA Services, FY 87.

II. PURPOSE. To evaluate the existence of contamination originating from the three fire training areas and the four Explosive Ordnance Disposal (EOD) sites on Fort Stewart and Hunter Army Airfield (AAF).

III. BACKGROUND.

A. Fire Training.

1. The training of firefighters is a necessary part of the safety program of any post. The Major Command and Department of the Army recognize this need for training by regulation (FORSCOM 420-4 and AR 420-90, Section 3).

2. Training of firefighters on Fort Stewart occurs on two small concrete pads, one located at each of the installation's two airfields. The location of a third older training area is near Zouck's Cemetery behind the current Facility Engineer's storage yard. This area contained no constructed pad (Figures 1, 2, and 3). Fuels and oils used at these sites are mostly water contaminated jet propelled fuel (JP-4) and Diesel Fuel; however, waste oils and solvents have been used in the past.

B. EOD Areas.

1. The detonation of old, dud, off-specification, or terrorist-generated explosives is a necessary activity in the safety program of an installation. The 38th EOD provides this function for Fort Stewart and Hunter AAF.

2. The EOD activity currently occurs on a small area (approximately 1 acre) in training area A-6 (EOD-1). Other areas which have been used in previous years are: EOD-2, located North-Northeast of Wright AAF in training area A-16; EOD-3, located east of the small arms impact area in training area B-8; and EOD-4, located in Hotel Range impact area in training area B-12 (Figure 1). The units used all of these areas to detonate explosive devices using an 1,3,5-trinitro-1,3,5-triazacychlohexane (RDX) initiator. A partial list of rounds detonated at these areas includes smoke grenades, illuminating projectiles and high explosive rounds. In addition, excess small arms rounds were burned.

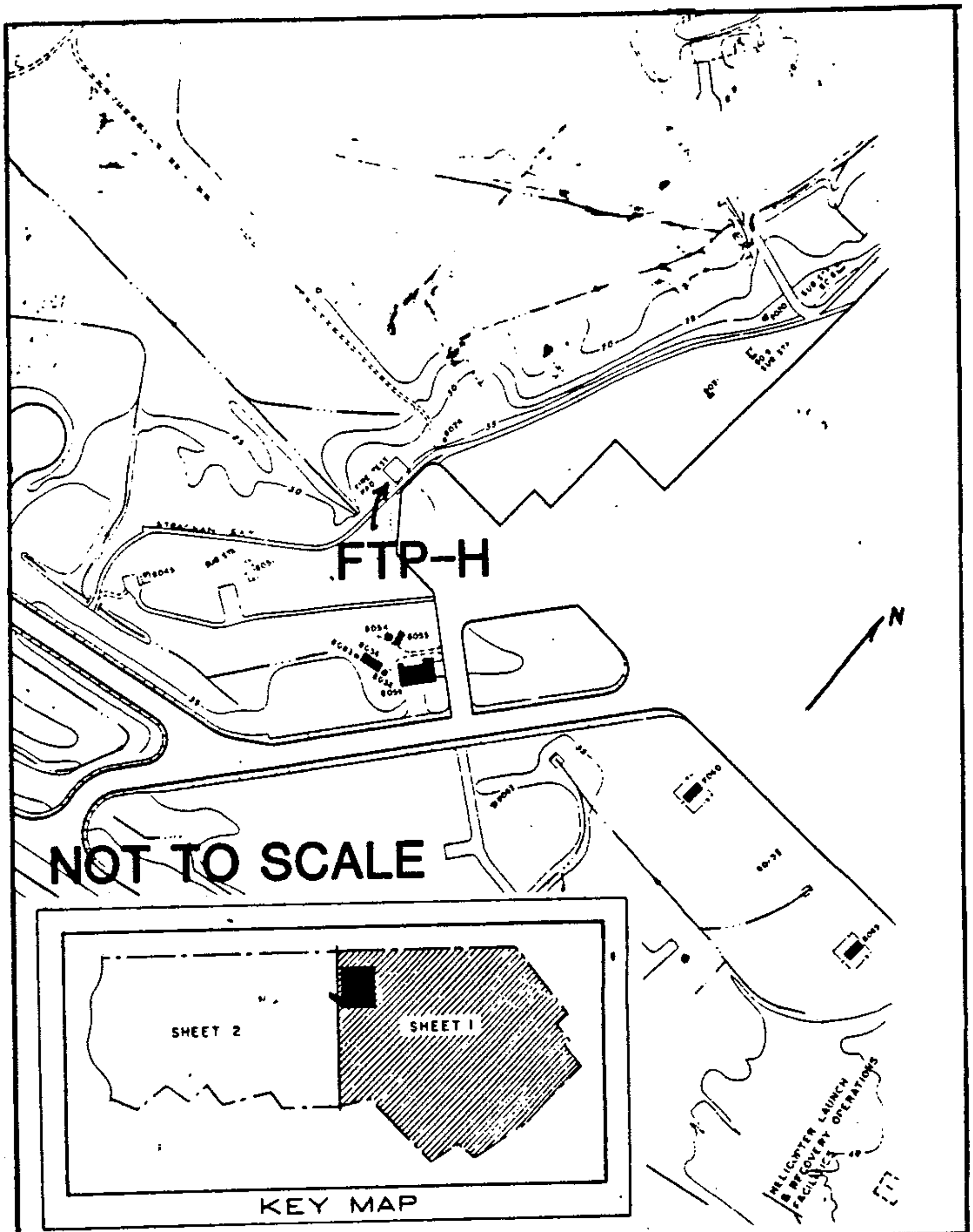

FIGURE 2. THIS FIGURE SHOWS THE LOCATION OF FTP-H ON HUNTER ARMY AIRFIELD.

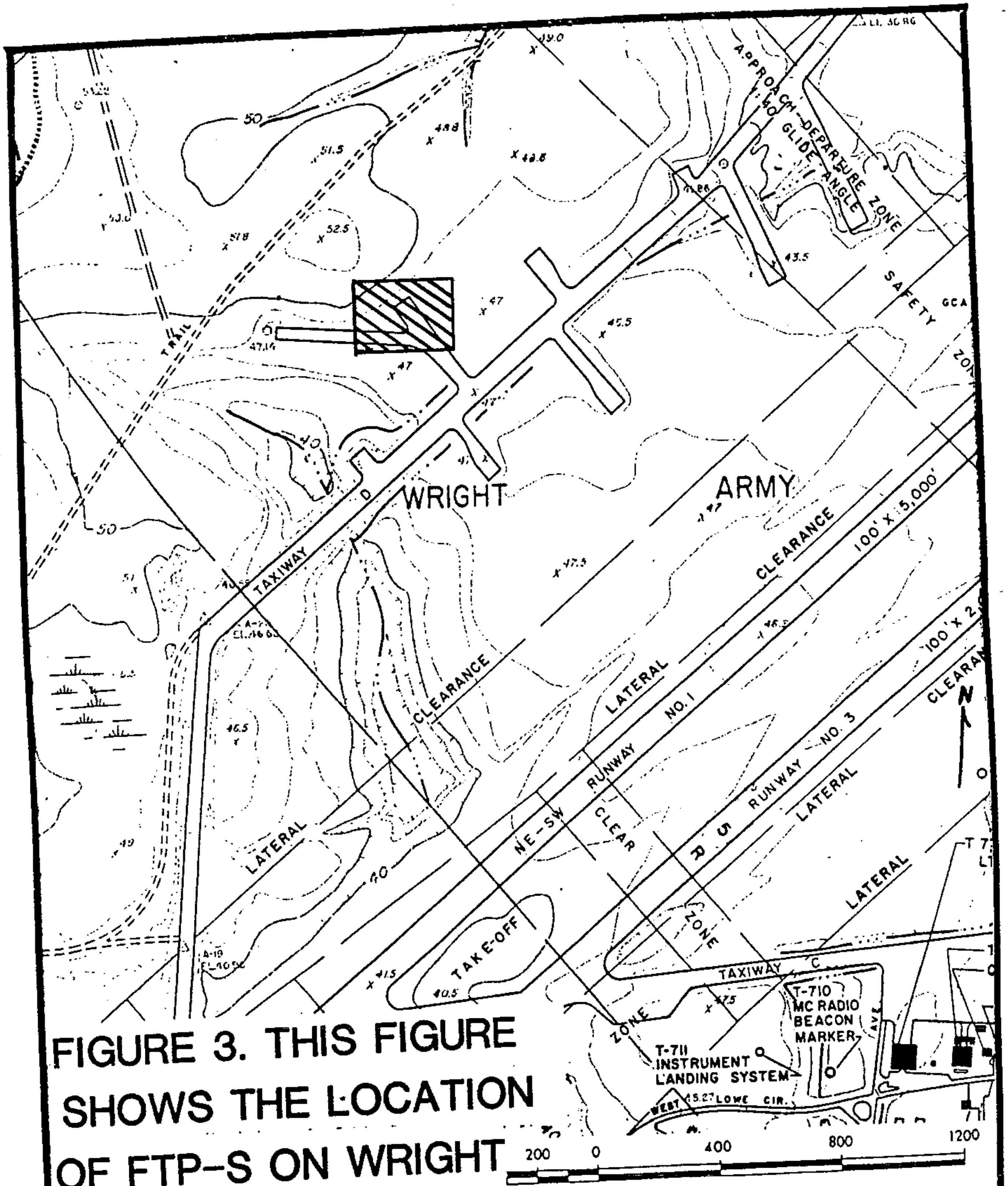

FIGURE 3. THIS FIGURE SHOWS THE LOCATION OF FTP-S ON WRIGHT ARMY AIRFIELD

C. This study represents the first step in determining the need for any remedial action. The analytical results of the soils collected from this study were used to determine the existence of specific contamination at each site studied. These sites will warrant further sampling to determine the extent of the contamination if the study crew finds significant contamination. This approach was used due to the large number of sites of possible contamination at Fort Stewart.

D. Fort Stewart has been notified that the Resource Conservation and Recovery Act (RCRA) Part B Permit has been issued by the State of Georgia; however, the document had not arrived by 20 July 1987 when this report was written. Thus, the conditions of the permit in regards to these sites are unknown.

IV. FINDINGS AND DISCUSSION.

A. General.

1. Since the Fire Department did not have a standing operating procedure (SOP) for the fire training pit, the study crew could draw no conclusions about the environmental soundness of the operation at the facility. The Fire Department should produce an SOP for fire training. This SOP should include environmental considerations such as ensuring that the installation does not burn any hazardous materials at the site, and that the firefighters inspect the liquids containment system (the concrete basin, bermed at the sides to prevent overflow) used at the site periodically.

2. Under the continuing release provisions of Section 3004u of RCRA of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, Fort Stewart should add these sites to their application for a Part B permit. They must identify all SWMU's to the regulatory authorities. The EOD and fire training areas should be listed as SWMU's to show what further action, if any, each site will require.

3. The installation did not have written plans for the final disposition of any of the sites evaluated in this study. While Federal and State regulations do not require closure plans for each SWMU, it is good engineering practice to develop a written plan for the environmentally sound disposition of any site involved with waste management. In addition, the active EOD site (EOD-4) and the EOD site recently inactivated (EOD-1) are covered by the installation's Part B Permit (ref 15) which states that closure and post closure plans are required. The installation should prepare written plans of final disposition for each fire training facility, EOD-2, and EOD-3. Additionally, the installation must prepare a closure plan, IAW the installation's hazardous waste facilities permit (ref 15), for the EOD-1 and EOD-4.

B. Regional Geology.

1. This area belongs to the Lower Pine Belt Landform of the Atlantic Coastal Plains Physiographic Province. The underlying geologic units of the area range in age from Eocene to Recent. These units consist

of unconsolidated and semiconsolidated sedimentary deposits and generally thicken and dip towards the coast. The geologic units include, from older to younger, the Lisbon formation, Gosport Sand, Ocala Limestone, Tampa Limestone Equivalent, Hawthorn formation and the Duplin Marl (Figure 4, reference 11). Recent surficial deposits consist of alluvium and residuum from weathered limestone.

2. The basement complex underlying these formations consists of metamorphic and igneous rocks which range in age from Pre-Cambrian to Triassic.

3. No active faults exist in this area (reference 11). However, active karst deposits exist east of Hinesville near the study area (reference 7). Neither of these geologic activities is expected to impact on this operation since they do not exist at the study sites.

C. <u>General Soils</u>.

1. The soil types which underlie this area of the United States belong mainly to the ultisol soil order. These are soils which form in situations that favor the rapid and complete alteration of weatherable minerals to secondary clays and hydrous oxides. These soils have the common characteristics of being very acid, highly leached, and rich in iron oxides.

2. The arrangement of these soils in this area shows that Fort Stewart lies in the older, stable terraces of the Atlantic Coastal Plain. These terraces are almost exclusively ultisols, except for the soils formed in more recently deposited sediments.

3. The soil series represented in the areas are as follows:

a. The fire training pit at Fort Stewart (FTP-ST) occurs in an area of Ocilla loamy fine sand. This series consists of somewhat poorly drained, nearly level sandy soils which exhibit an extremely low pH. They have developed in thick beds of acid marine sands that extend to a depth of 34 inches, where the texture changes to sandy clay loam for the remainder of the soil profile (reference 7). The seasonal high water table is located 1-2.5 feet below the soil surface.

b. The fire training pit at Hunter airfield (FTP-H) occurs in an area of Ellabelle loamy sand. This series consists of very poorly drained sandy soils which exhibit an extremely low pH. The dominant characteristic of these soils is that the seasonal high water table is at or near the soil surface for extended periods of the year. They have a black loamy sand surface soil and a yellowish brown sandy clay loam subsoil (reference 6). The seasonal high water table ranges from a 1-foot deep flood to 0.5 feet below the soil surface.

c. The fire training pit at Zouck's Cemetery (FTP-Z) occurs in an area of Echaw-Cantenary fine sand. This series consists of moderately well drained, sandy soils which exhibit an extremely low pH. They have developed in thick beds of acid marine sands. The texture of this series is

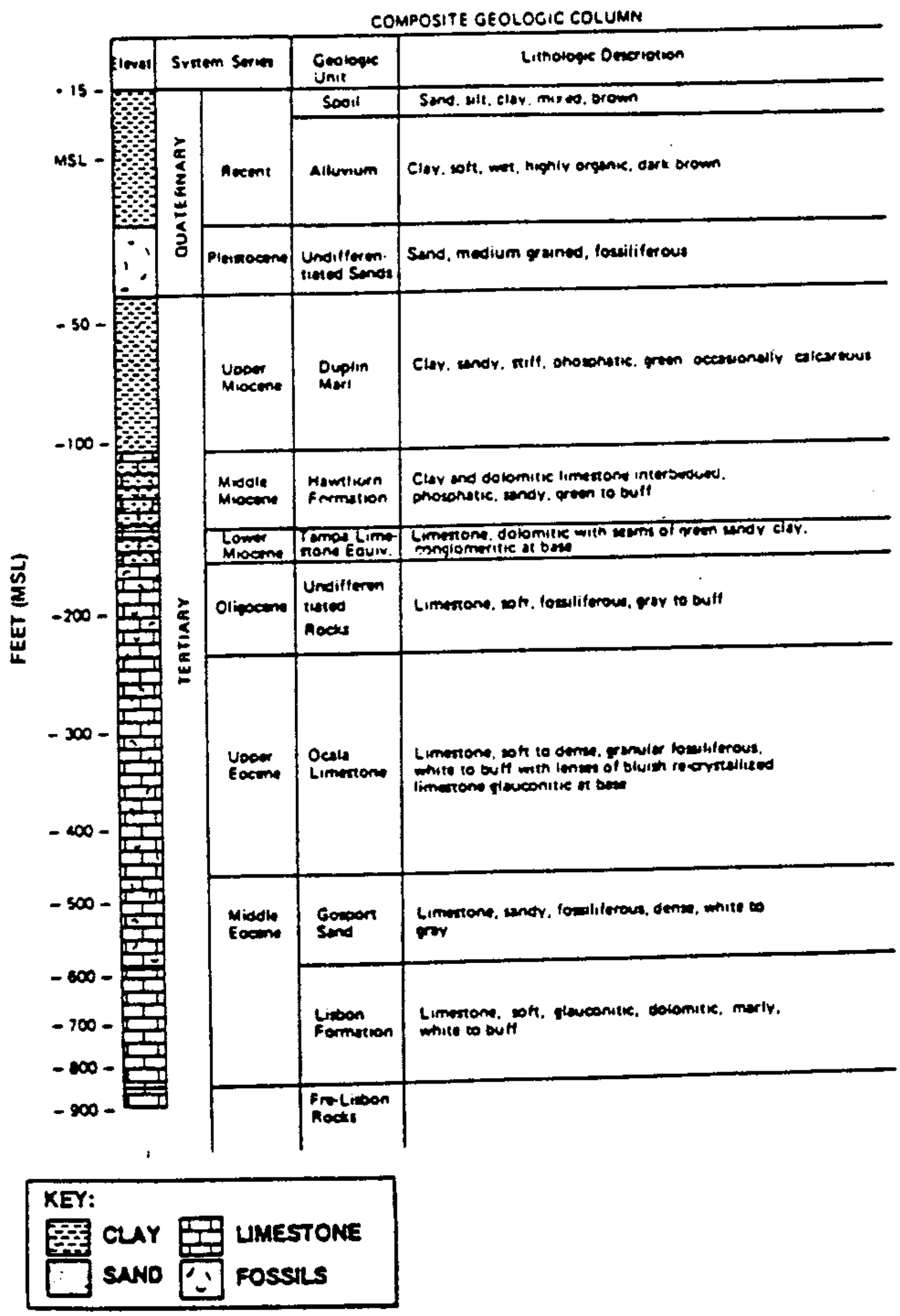

Figure 4
COMPOSITE GEOLOGIC COLUMN — FORT STEWART

SOURCE USATHAMA

1983, Reference 11, Appendix D.

fine sand which extends throughout the profile. These soils drain quickly. The seasonal high water table ranges between 3 to 5 feet of the soil surface (reference 3).

d. The EOD-1 occurs in an area of Wahee sandy loam. This series consists of somewhat poorly drained soils that have a highly mottled gray, red, and brown clayey layer below the surficial horizon. These soils occur on isolated, low ridges and were formed from coastal marine terraces (reference 7). The seasonal high water table ranges from 0.5-1.5 feet below the soil surface.

e. The EOD-2 occurs in an area of Fuquay loamy sand. This series consists of well drained soils that are moderately permeable in the upper part of the subsoil and slowly permeable in the lower part. These soils formed in sandy and loamy marine sediments on uplands of the coastal plain (reference 7). The seasonal high water table ranges from 4-6 feet below the soil surface.

f. The EOD-3 occurs in an area of Stilson loamy sand This series consists of moderately well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are common on uplands in the southern coastal plains. A perched water table fluctuates between depths of 2.5 and 3.0 feet and exists from the beginning of winter to the middle of spring (reference 7). The perched layer exists due to the slower permeability of the B horizon. The B horizon in this soil contains a significant increase in the content of clay when compared to the surficial horizon.

g. The EOD-4 occurs in an area of Kershaw coarse sands. This series consists of excessively drained, very rapid permeable soils that formed in sandy marine sediments. These soils form in ridges in the atlantic coast flatwoods (reference 7). The seasonal high water table is in excess of 6 feet below the soil surface.

D. Hydrogeology.

1. The majority of Fort Stewart is located in the Canoochee River watershed. The Canoochee River flows to the east and is a tributary of the Ogeechee River, which flows to the southeast and forms part of the eastern installation boundary.

2. There are two ground-water systems under Fort Stewart. These are the principle artesian aquifer, consisting of limestone units of Miocene, Oligocene, and Eocene age; and the shallow sand aquifer. The shallow sand aquifer ranges in depth from just under the ground surface to approximately 55 meters. It is generally separated from the lower principle artesian aquifer by a relatively impermeable confining layer consisting of the Hawthorn formation, but some exchange does take place. Depth of the principle artesian aquifer ranges from approximately 80 to 140 meters in the vicinity of Fort Stewart. This aquifer supplies the drinking water for

Fort Stewart and the nearby towns. Regional ground-water flow is east toward the coast. The direction of flow in the shallow sand aquifer is generally from higher elevations towards nearby streams (reference 11). The potential for contaminant migration at this installation is high for the unprotected sand aquifer. The lower artesian aquifer is protected from contamination by the semi-confining layer. Thus, the potential for contamination of the area's drinking water supply is minimal.

E. Soil Investigation.

1. General.

a. Samples were collected using the procedure outlined in (reference 10, Section 7.3). The drill crew used a power driven hollow stem auger to drill to the desired depth. The crew then obtained a sample from beyond the bottom of the auger using a split spoon sampler.

b. Samples with short holding times (Appendix A, Table A-1) were iced, packed and shipped by overnight delivery to the Analytical Quality Assurance Office (AQAO) for analysis. The remainder of the samples were refrigerated and held at the installation by the study crew until the end of the study and then shipped to the U.S. Army Environmental Hygiene Agency (USAEHA).

c. The crew took quality assurance provisions in the field and the laboratory. Two samples were taken upgradient of all sites for control purposes. Fourteen other samples were split in the field to meet the 20-percent quality control sampling required by the U.S. Environmental Protection Agency (EPA) (reference 10). The AQAO handles the laboratory quality control for this Agency. Depending on the specific parameter, this program consists of split samples, reagent blanks, and spiked samples. Paragraph V.E4 contains a detailed discussion of the quality control samples and results.

d. All samples were analyzed in accordance with (IAW) EPA methods described in reference 5. A complete list of analytical groups and corresponding test methods for soils appears in Appendix A, Table A-2.

e. Soil sampling schemes for this project were tailored to the type of site being sampled. The analytical plan for each site included only those analyses which the project officer expected from the operation of the site. Phase 1, an overview of the fire training areas and the EOD sites, generated a total of 75 samples, including quality assurance samples.

f. The crew addressed cross contamination by cleaning the drilling and sampling equipment periodically. The crew cleaned the drill steel and the rig with pressurized water between boreholes. In addition, they cleaned the sampling equipment between samples by first washing the equipment with trisodium phosphate soap, rinsing in distilled water, and rinsing again with isopropyl alcohol. The project officer checked decontamination by analyzing a sample of an extra rinse of the sampling equipment using isopropyl alcohol. The crew collected the extra rinse following the washing of the equipment, after collection of the last soil sample for each area.

2. Fire Training Areas.

a. Two types of fire training sites exist on Fort Stewart: two pits lined with concrete which show signs of significant cracking; and an unlined pit located in a sandy soil deposit. The sampling plan is (reference 12) outlined in the protocol. While this plan was ideal, conditions which prevailed onsite forced the modification of the sampling. The sampling and the modifications taken at each area follow.

b. The sampling at the FTP-ST consisted of 13 samples from 4 boreholes, including quality control samples. Figure 5 outlines the location of the boreholes. Figure 6 is a cross section developed from drill log data. Appendix B contains the bore logs for these holes. The borehole denoting the most contaminated area (BH 4) was supposed to be drilled in the center of the pit but could not be. Instead, the crew drilled this borehole near the pit berm in a location where the pit apparently overflows frequently during the operation of the training exercise. Samples from this borehole were split for quality control. The project officer chose this location through discussions with the fire fighters and by noting the stained soil on that side of the pit. The crew could not drill in the center of the pit since the pit was full of liquids from the last training operation and installation personnel would not allow the concrete liner to be compromised. In addition, samples were collected from three other boreholes IAW the sampling plan for fire training pits. Two additional samples were taken: One of the burn residue in the pit and the other of the rinse alcohol following washing of the sampling equipment to ensure adequate equipment decontamination.

c. The sampling at the FTP-Z consisted of 11 samples from 4 boreholes, including quality control samples. Figure 7 outlines the location of the boreholes. Data from the drill logs were used to develop the cross-section in Figure 8. Appendix B contains the bore logs for these holes. This fire training area had not been used for the last 20 years. Recent use of the site was for storage of leaves and pine needles collected in the cantonment area. Like the FTP-ST, the crew could not drill the borehole denoting the most contaminated area (BH 5). The project officer relocated this site to near the edge of the pile of debris. The crew did not bore in the center of the pit since, at the time of the drilling for this site, the debris was actively smoldering. Samples from this relocated borehole were split for quality control. Samples were collected from three other boreholes IAW the sampling plan for fire training pits. Two additional samples were taken: One of the burn residue and the other of the rinse alcohol following washing of the sampling equipment to ensure adequate equipment decontamination.

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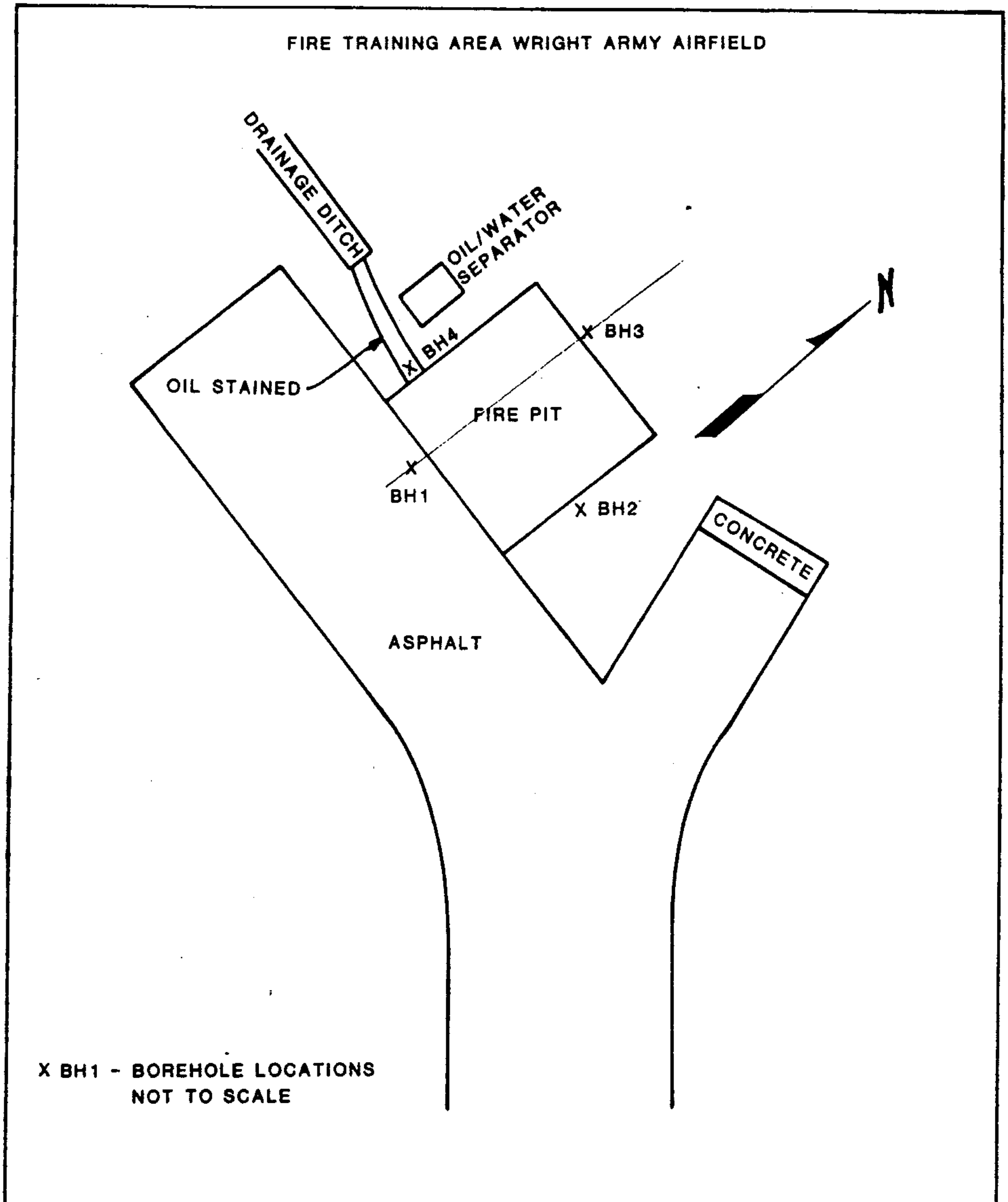

FIGURE 5. BOREHOLE LOCATIONS FOR WRIGHT ARMY AIRFIELD

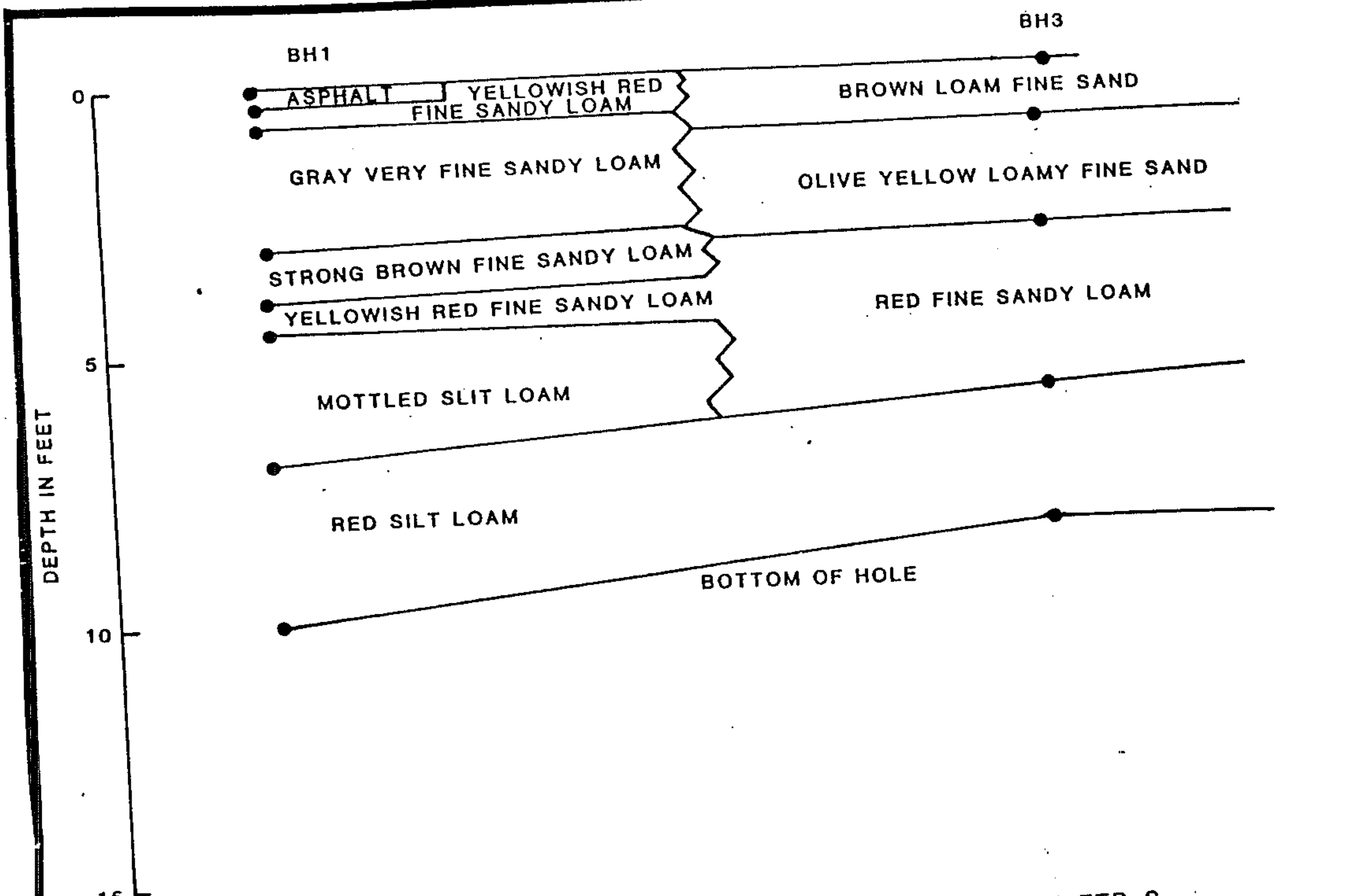

FIGURE 6 THIS FIGURE DEPICTS THE CROSS SECTION FOR FTP-S

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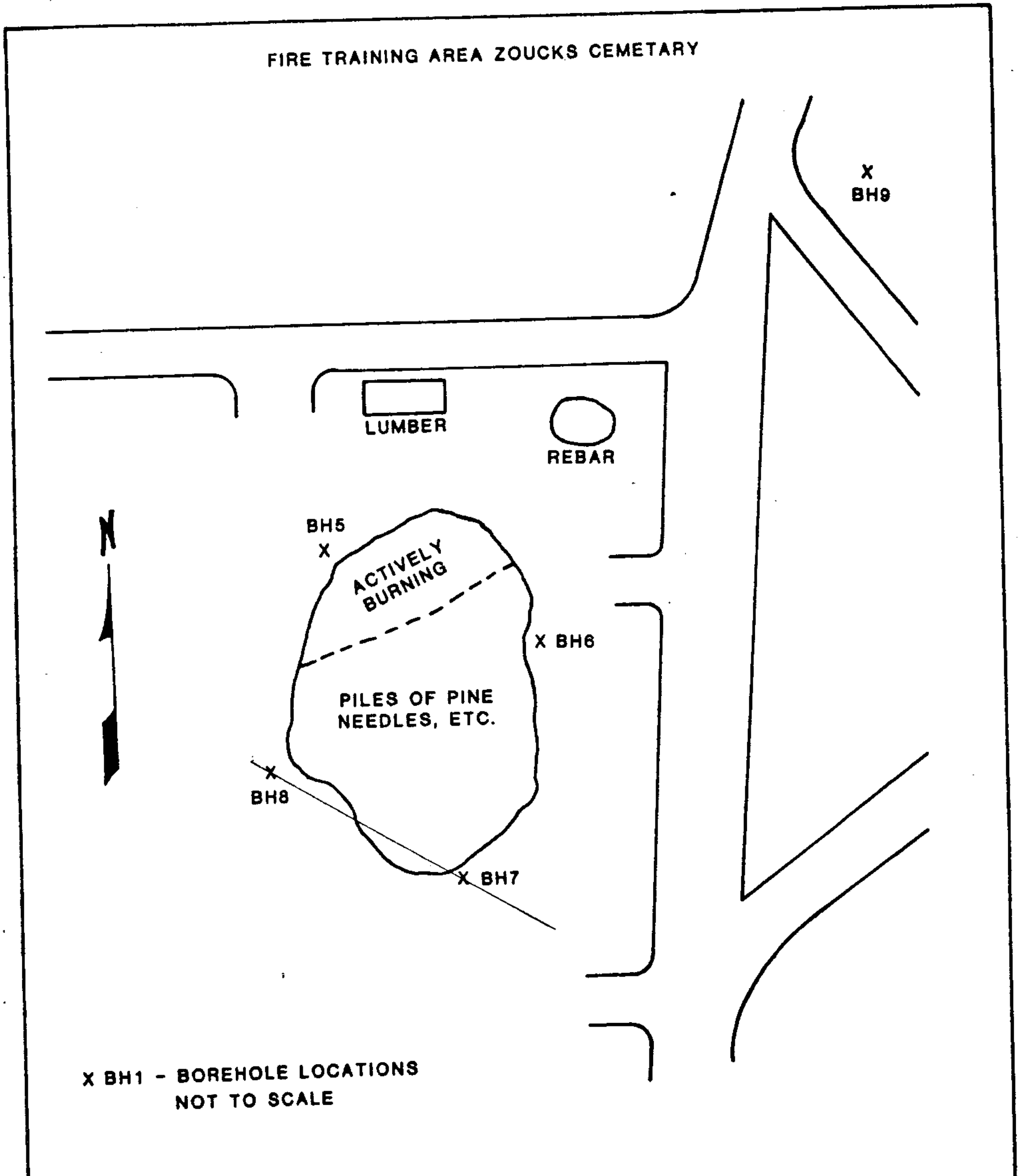

FIGURE 7. BOREHOLE LOCATIONS FOR ZOUCKS CEMETARY

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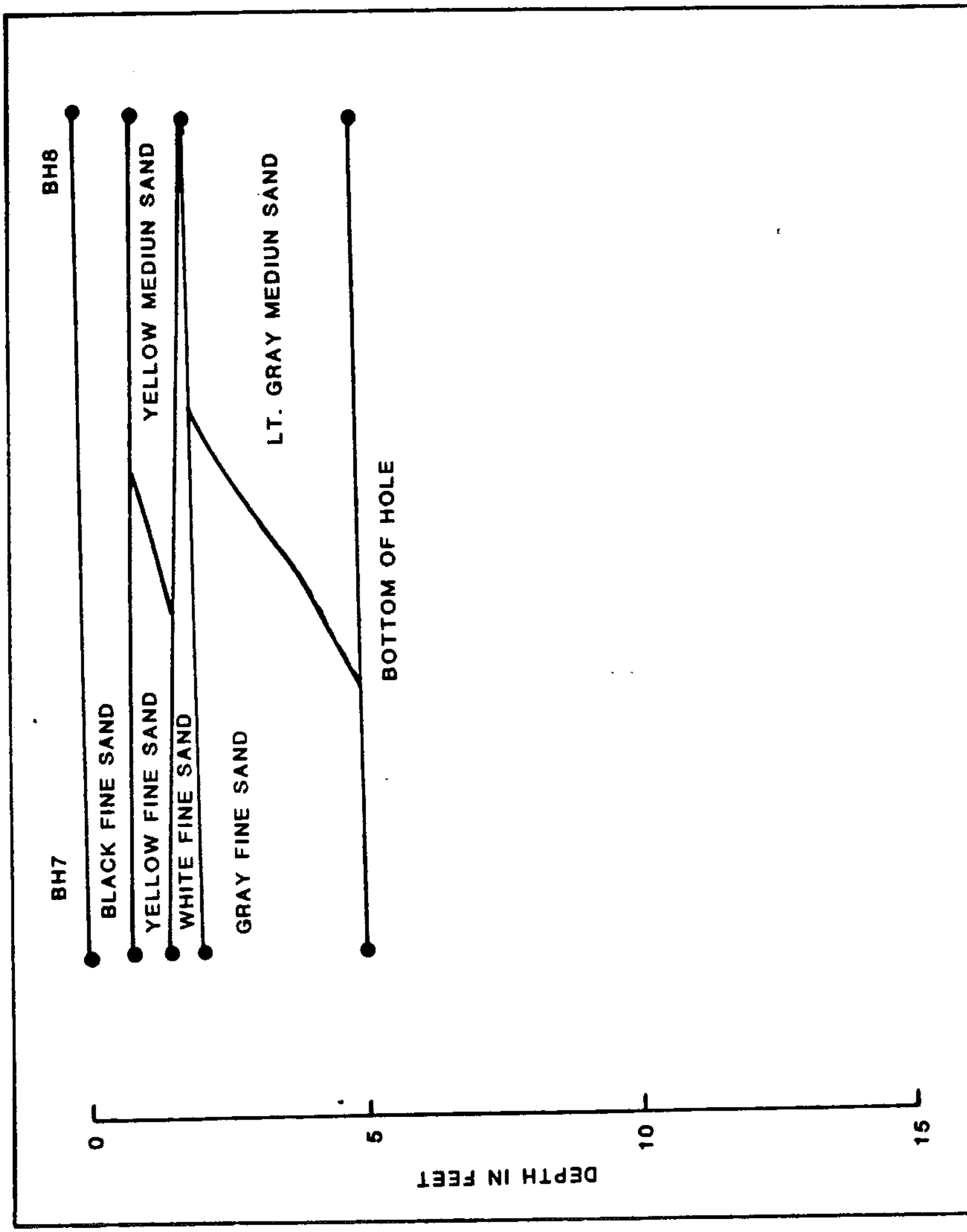

FIGURE 8. THIS FIGURE DEPICTS THE CROSS SECTION FOR FTP-Z

d. The sampling at the FTP-H consisted of 11 samples from 4 boreholes, including quality control samples. Figure 9 outlines the location of these boreholes. Figure 10 is a cross-section developed from the borehole data. Appendix B contains the bore logs for these holes. Like the FTP-S, the crew could not drill the borehole denoting the most contaminated area (BH 13). The project officer relocated this hole to a spot near the pit berm in a location where the pit apparently overflows frequently during the training exercise. The project officer chose this location from discussions with the firefighters and by noting the stained soil on that side of the pit. Samples from this borehole were split for quality control. The crew could not bore in the center of the pit since the post would not allow the concrete liner to be compromised. Samples were collected from three other boreholes IAW the sampling plan for fire training pits. The crew took one sample of the rinse alcohol following washing of the sampling equipment to ensure adequate equipment decontamination.

e. The crew drilled one borehole in the area outside the cantonment area to serve as a common background hole to all of the samples taken for this study. Appendix B contains the log for this borehole (BH 9).

f. This Agency analyzed each sample collected from these areas for metals [total and the EPA's Toxic Extraction Procedure (TEP) metals, reference 4], pesticides, polychlorinated biphenyls (PCBs), volatile organics, acid extractable organics, and base-neutral extractable organics. However, all of the samples were not submitted to the laboratory at the same time. The crew submitted the samples taken from the borehole drilled in the area suspected of having the highest concentration of contaminants as soon as possible following collection. All of the volatile organic, metals, acid and base-neutral extractable organic analyses were also submitted at the same time. The samples collected for PCB/pesticide were submitted under a different schedule. If the analysis of the samples from the borehole (drilled at the area suspected of having the highest contamination) detected any contamination by pesticides or PCBs, the remainder of the samples for this analysis were to be submitted for analyses. If, however, this analysis did not detect a contaminant, the remainder of the samples for this contaminant, from that area, would not be analyzed. This area would then be considered "clean" of pesticides/PCBs. The project officer chose this sampling scheme to minimize the number of samples while yielding an accurate determination of the existence of contamination at the fire training operation.

g. The analysis for total metals was performed to more fully characterize the site's soil chemistry. The analytical plan for this study included an analysis for total metal content. The State of Georgia Hazardous Waste Regulations are based on the results of TEP metals analysis not total metals.

h. The analytical results for the samples collected from the fire training areas are tabulated in Appendix C. The results tabulated in Appendix C include only those samples which contained parameter species in

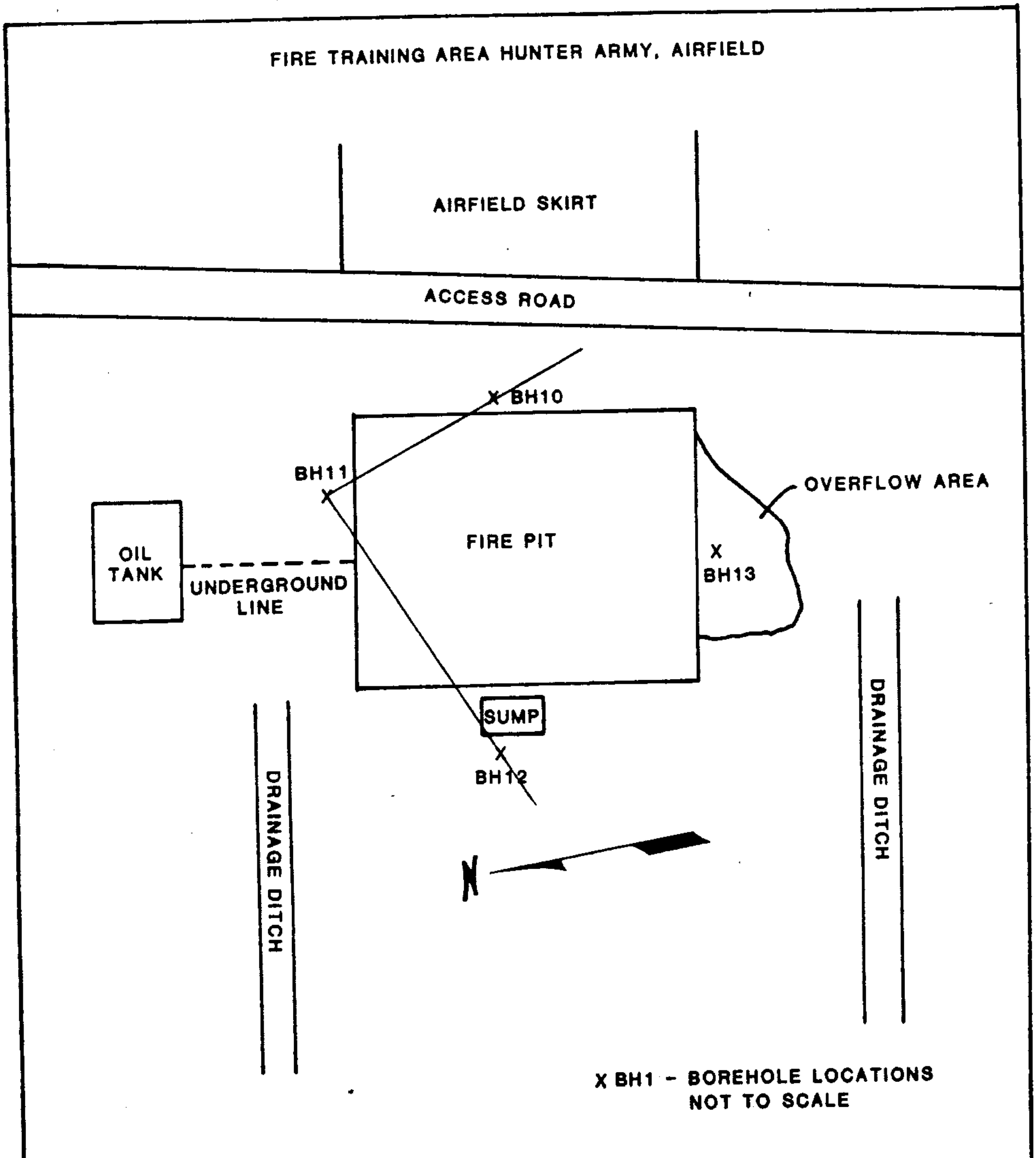

FIGURE 9. BOREHOLE LOCATIONS FOR HUNTER AIRFIELD

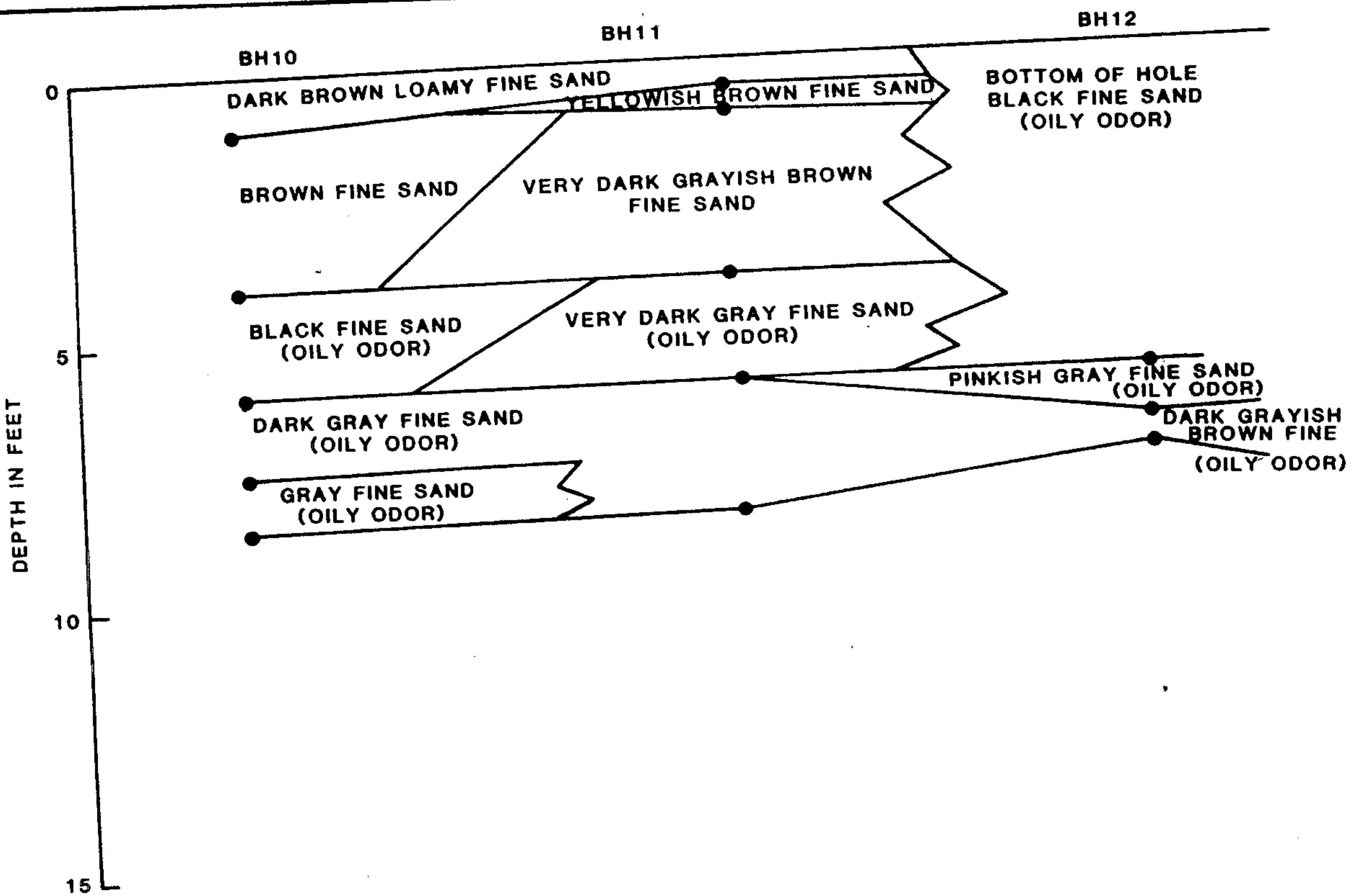

FIGURE10THIS FIGURE DEPICTS THE CROSS SECTION FOR FTP-H amounts above the detection limit. Samples not included in these tables did not contain detectable quantities of any of the chemical species analyzed for. Appendix A, Table A-3 contains a list of the analytical parameters used in this study along with their associated detection limits. The following is a discussion of these results by training area.

(1) The analysis of samples collected at FTP-ST at Wright AAF revealed the following results.

(a) Pesticide compounds were not found in the samples analyzed from this area. Therefore, the area is considered clean of pesticides/PCBs for reasoning discussed in paragraph V.2f. Appendix A, Table A-3 includes a list of pesticide compounds in this scan.

(b) The analysis for volatile organics and acid and base-neutral extractable organics revealed that all of the samples contained compounds relating to JP-4 and diesel fuels. In addition, a sample of the pit residue and one soil sample contained various compounds on the EPA's priority pollutant list (Appendix A, Table A-3). The residue left in the pit consisted of soil blackened by the oils and fuels used in the training operation. Organic analysis of this sample revealed 7,900 parts per billion (ppb) phenanthrene and 3,000 ppb bis(2-ethylhexyl) phthalate. One soil sample (sample number 40) collected from a depth of 9-10 feet in borehole 1 (Figure 5) contained 1,700 ppb phenanthrene, 5,100 ppb fluoranthene, 2,000 ppb benzo(a)anthracene, 2,500 ppb bis(2-ethylhexyl) phthalate, 1,108 ppb benzo(a)pyrene, and 500 ppb indeno(1,2,3-cd)pyrene. Normally, phthalates can be discounted since they are a common impurity in the laboratory procedure for extractable organics. However, one of the phthalate compounds in these samples is recognized due to its elevated level. Most of these compounds are derivatives from the incomplete combustion of coal tar and most of these are suspected carcinogens. One of these compounds, benzo(a)pyrene, is a known carcinogen. However, since the compound was found in only one sample, the data indicates a localized contamination. Based on the localized nature of the compound, it should not pose a threat the human health or the environment. Appendix C contains the analytical results. Appendix A, Table A-3 includes a list of the compounds contained in this scan.

(c) The analysis for metals consisted of two parts: total metals and TEP metals [cadmium (Cd), selenium (Se), barium (Ba), lead (Pb), silver (Ag), arsenic (As), mercury (Hg), chromium (Cr)]. The analytical results for total metals showed the existence of various levels of As (1.99-65.7 parts per million [ppm]), Ba (3.74-15.5 ppm), Hg (0.390-0.400 ppm), and Pb (25.6-608.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration, with one exception. Sample number 45 (borehole 4, surface) contained 608 ppm total Pb. This result significantly exceeded the Pb concentration of any of the background samples. All but two samples also contained levels of total Cr ranging from 4.13-17.5 ppm. These data could have resulted from the past use of waste oils in fire training which may have contained Pb compounds or Pb additives. The analysis for TEP metals failed to reveal the existence of any of these compounds at the fire training pit above the detection limit of the analysis. These results showed that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment, these compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

(2) The analysis of samples collected at FTP-Z near the cantonment area revealed in the following results.

(a) Pesticide compounds were not found in the samples analyzed from this area. Therefore, the area is considered clean for pesticides/PCBs for reasoning discussed in paragraph V.2f. Appendix A, Table A-3 includes a list of pesticide compounds in this scan.

(b) The analysis for volatile organics, acid and base-neutral extractable organics failed to reveal any of these compounds in the samples collected from this area.

(c) The analysis for metals consisted of two parts: total metals and TEP metals. The analysis for total metals showed the existence of various levels of As (1.97-13.9 ppm), Ba (1.97-20.5 ppm), Hg (0.391-0.398 ppm), and Pb (1.38-505.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration, with one exception. The sample of the burn residue (sample number 52) contained 505 ppm total Pb. This result significantly exceeded the Pb concentration of any of the background samples. However, the analytical results or leachability of Pb (TEP) revealed that the metals were not mobile. These data could have resulted from the past use of waste oils which may have contained Pb compounds or Pb additives. In addition, a sample of the burn residue contained 25.7 ppm Cd and 5.9 ppm total Cr. Three other samples of the soil collected from the top of the phreatic surface contained levels of Cd ranging from 1.95-4.99 ppm and total Cr ranging from 7.17-11.9 ppm. The analysis for TEP metals failed to reveal the existence of any of these compounds at the fire training pit above the detection limit of the analysis. These results showed that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment these compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

(3) The analysis of samples collected at FTP-H at Hunter AAF revealed the following results.

(a) Pesticide compounds were not found in the samples analyzed from this area. Therefore, the area is considered clean for pesticides/PCBs for reasoning discussed in paragraph V.2f. Appendix A, Table A-3 includes a list of pesticide compounds in this scan.

(b) The analysis for volatile organics and acid and base-neutral extractable organics revealed that all of the samples contained compounds relating to JP-4 and diesel fuels. In addition, three soil samples collected from the approximate top of the phreatic surface contained various compounds on the EPA's priority pollutant list. Organic analysis of these samples revealed concentration ranges of 5,800-10,000 ppb Naphthalene, 10,000-19,000 ppb 2-methylnaphthalene, 600-2,400 ppb Di-n-butylphthalate and 300-1700 ppb bis(2-ethylhexyl) phthalate. Two of these samples also contained Fluoranthene (200 + 400 ppb) and Phenanthrene (200 + 900), respectively. Trace levels of Phthalates are a common impurity in the laboratory procedure for extractable organics. However, two of the phthalate compounds in these samples are recognized due to their elevated levels. The existence of these compounds at the top of the phreatic surface (approximately 8-feet deep) suggests movement of these compounds to the ground water and away from the site. Appendix C contains the results of these analyses. Appendix A, Table A-3 includes a list of the compounds contained in this scan.

(c) The analysis for metals consisted of two parts: total metals and TEP metals. The analysis for total metals showed the existence of various levels of As (1.93-13.9 ppm), Ba (7.19-64.4 ppm), Hg (0.387-0.400 ppm), and Pb (13.8-1185.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration, except for lead. Four samples collected from this area contained levels of total lead which significantly exceeded the lead concentrations in the background samples. High lead concentrations were found in four surface samples and ranged in concentration from 645-1185 ppm. Other metals found in these samples were Se ranging from 0.194-0.799 ppm (6 of 10 samples), total Cr ranging from 4.16-12.8 ppm (5 of 10 samples), and Cd ranging from 1.99-3.87 ppm (3 of 10 samples). These data could have resulted from the past use of waste oils which may have contained lead compounds or lead additives. The analysis for TEP metals failed to reveal the existence of any of these compounds at the fire training pit above the detection limit of the analysis. These results showed that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment, these compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

(d) The FTP-H occupies the edge of one of the runways at Hunter AAF. The topography of the area adjacent to FTP-H slopes rapidly to two small stream which flank and drain the FTP-H (Figures 2 and 9). These streams flow intermittently and are located approximately 150 yards from the pit. The soils of the area are sandy (highly permeable) and exhibit a high water table (approximately 8-feet below the soil surface). As such, the above mentioned contamination should migrate vertically from this site to the water table and laterally to the two stream channels. The contamination should then enter the stream and be drained to the Ossabaw Sound by the Forest River (Middle Marsh).

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(e) These results warrant further sampling under 40 CFR 264.101 and 40 CFR 270.14 to determine the extent of this contamination and its possible impact on the streams and marshland adjacent to the site. Further sampling at this site should include soil, ground water, and surface water.

3. EOD Areas.

a. Due to the possibility of contacting unexploded ordnance, the study crew used a transect mode of sampling (reference 10, Section 6.4) to minimize the amount of movement through the area. The project officer chose the transect since it also was the most representative sampling scheme considering operation of an EOD area. The detonation of explosive devices spreads contaminants in a radial pattern around the blast crater. The EOD team groups these craters as close together as practical. After which, the installation levels the area with a dozer (or similar) and the process is repeated. Thus, as long as the crew can identify craters, sampling along a transect through the cratered area would produce a better indication of the contamination of the area than sampling from a random grid pattern.

b. For three of the four EOD sites, the study crew took a transect consisting of 10 samples oriented to intersect as many craters as possible. The crew chose locations at the center of the main crater and at 40-foot intervals in opposite directions. In the four areas, the crew found only one elongated crater. Sampling for this area (EOD-3) consisted of two shorter transects. The crew limited soil sampling to the uppermost 1 inch of soil due to the safety problems associated with unexploded ordnance. The crew took the central sample at the center of the group of craters with eight of the other samples being taken at distances of 40-foot intervals from the center in opposite directions. The tenth sample was a split of the central sample taken for quality control.

c. This Agency analyzed the sample taken at the center of the group of craters for explosive residue, total and TEP metals, pesticides, volatile organics, acid extractable organics, and base-neutral extractable organics, since the project officer expected this point to contain the most contamination. The laboratory analyzed each of the other samples for explosive residue, and total and TEP metals as an indication of possible contamination.

d. In general, analysis of these samples failed to show contamination at any of these areas by the following groups of compounds: volatile organics, acid extractable organics, base-neutral extractable organics, explosive compounds, or pesticides/PCBs. Appendix A, Table A-3 includes a list of the compounds contained in these analyses. Specific results of the analysis of soils collected from these areas follow by area.

(1) Metals analysis of the samples collected at EOD-1 in training area A-6 revealed the following results (Figure 11). This analysis consisted of two parts: total metals and TEP. The analysis for total

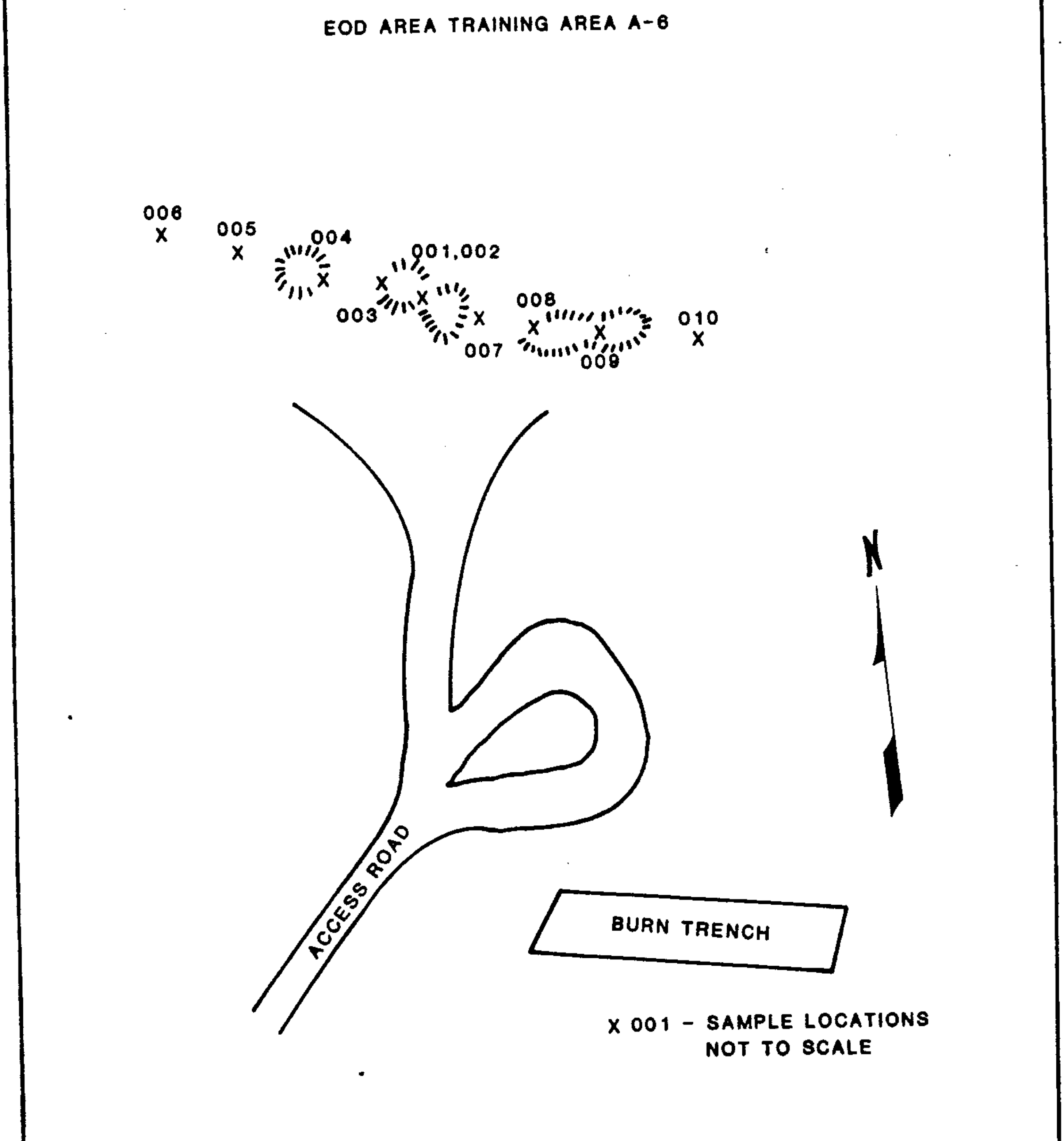

FIGURE11.SAMPLE LOCATIONS FOR TRAINING AREA A-6

metals showed the existence of various levels of Ba (8.32-17.9 ppm), Hg (0.359-0.398 ppm), and Pb (28.5-184.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration. This indicates that these metals may be indigenous to the soils of this area. Other metals found in these samples were As ranging from 1.80-12.9 ppm (6 of 10 samples), Se ranging from 0.199-0.299 ppm (2 of 10 samples), and Cd ranging from 1.99-21.8 ppm (9 of 10 samples). Total Cr was 3.92 ppm in one sample. These metals were probably the result of the operation of the EOD area. The analysis for TEP metals failed to reveal the existence of any of these compounds above the detection limit of the analysis. The results indiate that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment, these compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

(2) Metals analysis of the samples collected at EOD-2 in training area A-16 revealed the following results (Figure 12). This analysis consisted of two parts: total metals and TEP metals. The analysis for total metals showed the existence of various levels of As (3.91-12.9 ppm), Ba (5.33-11.5 ppm), Hg (0.368-0.429 ppm), and Pb (30.1-116.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration. This indicates that these metals may be indigenous to the soils of this area. Other metals found in these samples were Se ranging from 0.259 ppm (1 of 10 samples), total Cr ranging from 4.55-4.78 ppm (3 of 10 samples), and Cd ranging from 1.84-25.4 ppm (8 of 10 samples). The analysis for TEP metals failed to reveal the existence of any of these compounds at the fire training pit above the detection limit of the analysis. These results showed that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment, these compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

(3) Metals analysis of the samples collected at EOD-3 in training area B-8 revealed the following results (Figure 13). This analysis consisted of two parts: total metals and TEP metals. The analysis for total metals showed the existence of various levels of As (1.98-9.91 ppm), Ba (9.72-50.6 ppm), Hg (0.394-0.400 ppm), and Pb (97.8-3281.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration, except for lead. The data from the analysis of these samples for lead revealed results which were significantly higher than the concentration of lead in the background samples. Other metals found in these samples were Se ranging from 0.257 ppm (1 of 9 samples), total Cr ranging from 9.00-10.4 ppm (2 of 9 samples), and Cd ranging from 1.98-26.0 ppm (3 of 9 samples). The analysis for TEP metals failed to reveal the existence of any of these compounds at the fire training pit above the detection limit of the analysis. These results showed that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment, these

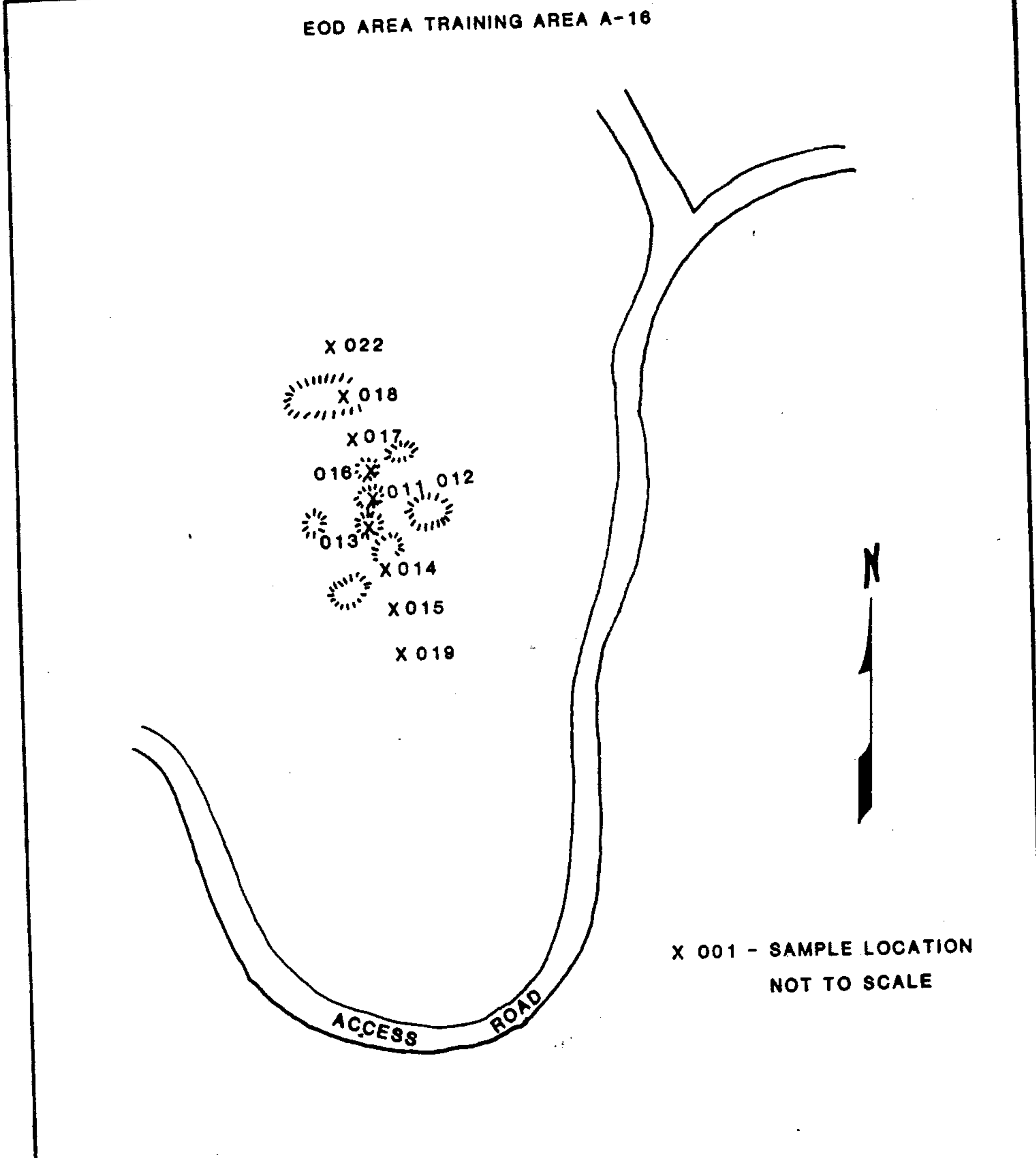

FIGURE12.SAMPLING LOCATIONS FOR TRAINING AREA, A-16

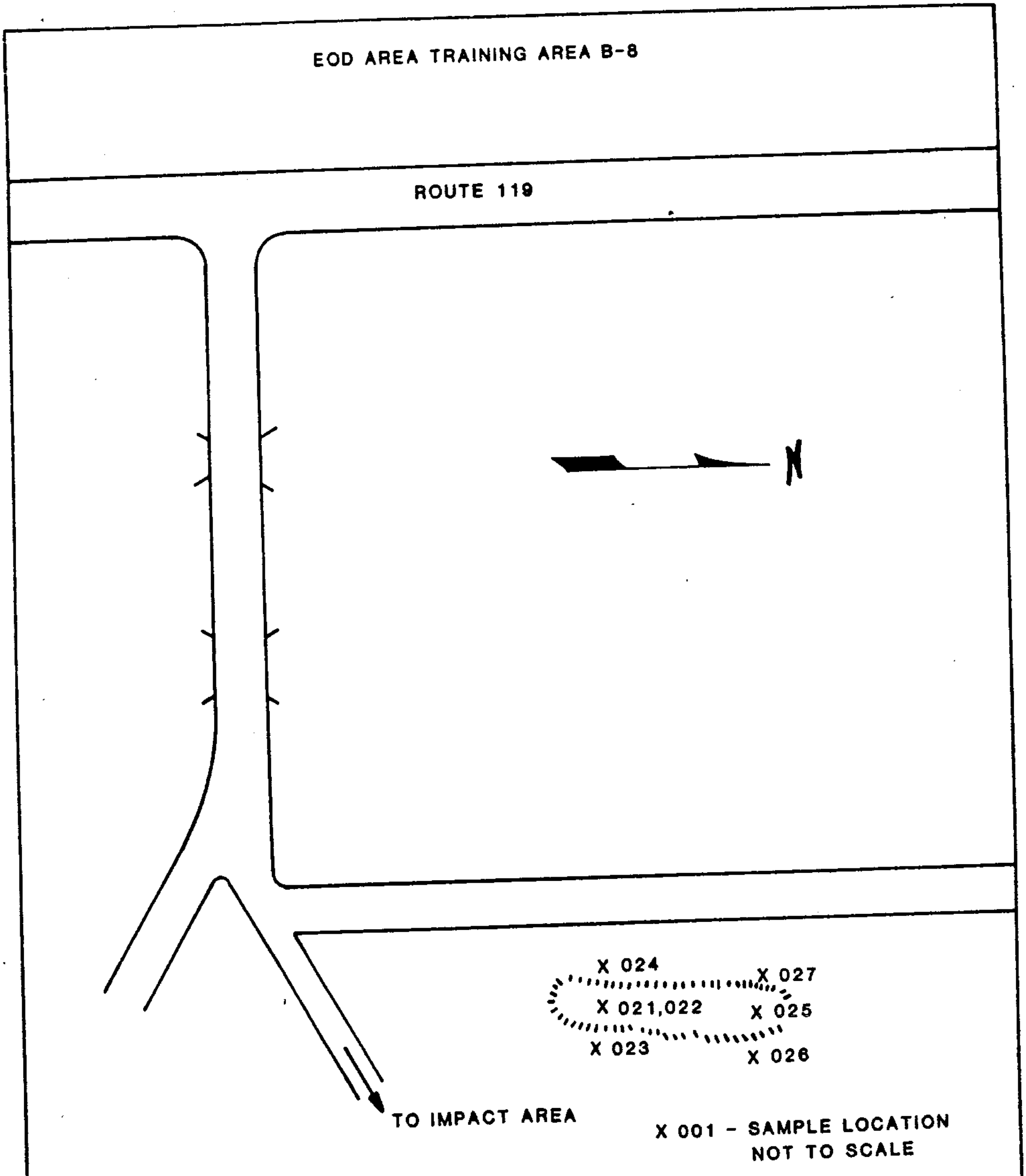

FIGURE13.SAMPLE LOCATIONS FOR TRAINING AREA B-8

compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

(4) Metals analysis of the samples collected at EOD-4 in training area B-12 revealed the following results (Figure 14). This analysis consisted of two parts: total metals and TEP metals. The analysis for total metals showed the existence of various levels of As (1.98-21.4 ppm), Ba (2.78-8.17 ppm), Hg (0.395-0.414 ppm), and Pb (35.8-432.0 ppm) in all of the samples. These compounds were also found in the background samples in approximately the same concentration, except for lead. Two samples collected from this area contained levels of total lead which significantly exceeded the lead concentrations in the background samples. High lead concentrations were found in two surface samples corresponding to 40 and 120 feet from the center of the main crater. These locations were themselves within smaller blast craters. The data from these locations were 432 ppm and 191 ppm, respectively. Other metals found in these samples were Se ranging from 0.787 ppm (1 of 9 samples), total Cr ranging from 3.69-4.35 ppm (3 of 9 samples), and Cd ranging from 1.98-518.0 ppm (8 of 9 samples). The analysis for TEP metals failed to reveal the existence of any of these compounds above the detection limit of the analysis except for one sample. Sample 30 from the berm of the main crater (central crater) contained 0.43 milligram per Liter (mg/L) TEP Cd. This result is less than the 1.0 mg/L RCRA criteria for HW as outlined by 40 CFR 261.24. Therefore, these results failed to show that this area contains hazardous wastes (HW's). These results showed that the compounds exist in the soil. However, the compounds are not leachable as defined by the TEP. Thus, in the present environment, these compounds are not mobile in the soil and should not pose a risk to human health or the environment. Appendix C contains the results of these analyses.

e. The collective results of the analyses for the soils collected from the EOD area do not warrant further sampling or remedial action.

4. Quality Assurance.

a. The following is a discussion of the field quality control measures taken during this study.

(1) A total of 14 samples were collected for quality control. These measures consisted of 10 split samples, 3 wash samples, and 1 sample of the rinse solvent (isopropyl alcohol). Field quality assurance involved 11 percent of the samples taken to evaluate the EOD areas and 26 percent of the samples taken to evaluate the fire training areas.

(2) Analysis of these quality control samples did not indicate any problem with the decontamination procedures or chemical analysis in this study. Statistical analysis of this data was performed IAW methodologies outlined by Koch, et al., (reference 13) and Till (reference 14).

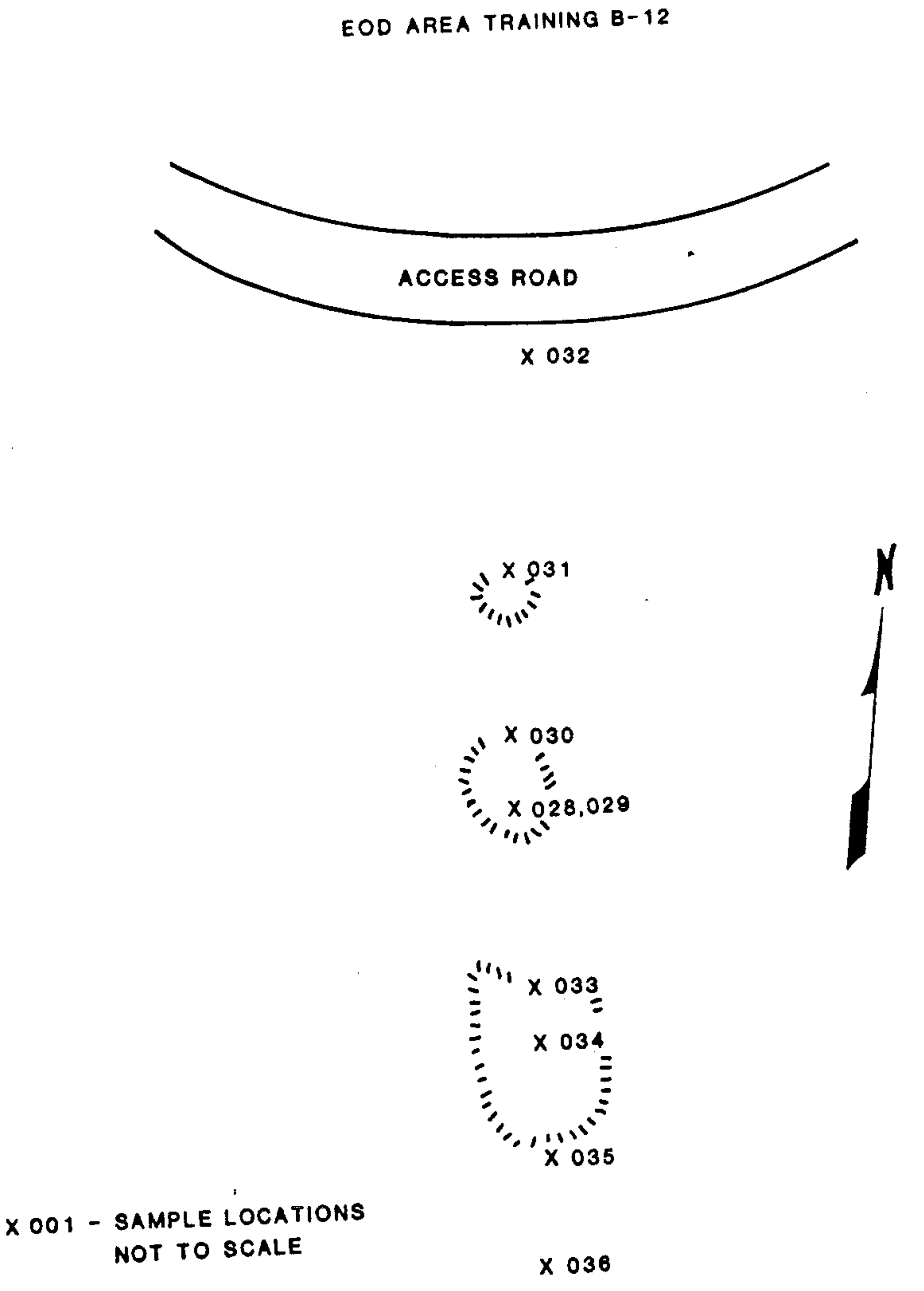

FIGURE14.SAMPLE LOCATIONS FOR TRAINING AREA B-12

(a) Analysis of the rinse solvent (sample number 75) revealed that the alcohol used was not contaminated with any of the chemical species used to evaluate the sites contamination.

(b) Analysis of the wash samples (sample numbers 49, 63, and 74) showed the decontamination procedure was adequate to prevent cross-contamination of the samples by the sampling equipment.

(c) Analysis of the split samples showed no significant difference in any of the chemical species. A duplicate sample collected for the surface of borehole 4 (the fire training area at Wright AAF) revealed a difference in the analysis for total lead. One of the samples resulted in a measurement of 608 ppm lead (sample number 45) while the other resulted in a measurement of 43.6 ppm (sample number 48). This result is acceptable since none of the other chemical species measured for these samples showed any significant difference and may indicate the surface variability for this parameter.

V. CONCLUSIONS.

A. The study crew did not find significant contamination at any of the EOD areas.

B. The study crew did not find significant contamination at the fire training area located near Zouck's Cemetery.

C. The study crew found subsurface soil contamination at the fire training areas located at Wright and Hunter AAF's.

D. The contamination found at Wright AAF is localized and should not require remedial action.

E. Closure plans do not exist for the facilities evaluated in this study.

F. The Fire Department did not have an SOP for fire training.

G. The contamination at Hunter Army Airfield requires further study to determine the extent of the contamination.

H. The fire training and EOD areas are SWMU's.

VI. RECOMMENDATIONS.

A. To ensure regulatory compliance, the following recommendations are made:

1. Add the fire training and EOD areas to the installation's list of SWMU's [40 CFR 264.101].

2. Initiate a study to evaluate the extent of contamination at Hunter AAF to determine corrective action [40 CFR 264.101].

3. Prepare closure and post closure plans for the permitted EOD sites as outlined in the installation's Part B Hazardous Waste Facility Permit (Letter, from Director, Georgia Department of Natural Resources, to Major Stovall, DEH, Fort Stewart, 14 August 1987).

B. To ensure good environmental engineering practice, the following recommendations are made:

1. Produce an SOP on fire training to ensure an environmentally sound operation.

2. Prepare a plan for the final disposition of all the fire training areas, including the one near Zouck's Cemetery, EOD-2, and EOD-3.

VII. REFERENCES. For a list of references see Appendix D.

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APPENDIX A

TABLES OF HOLDING TIMES, ANALYTICAL METHODS, AND ANALYTICAL PARAMETERS

Hazardous Waste Study No. 37-26-0127-88, Ft Stewart, GA, 24-31 Mar 87

TABLE A-1. HOLDING TIMES

Parameter	Holding Time
Volatile Organics	14 days
Acid Extractable Organics	30 days
Base-Neutral Extractable Organics	30 days
Explosives	30 days
Pesticides/PCB	30 days
Metals	6 months

TABLE A-2. METHODOLOGIES

Parameter	SW-846 Method Number
Volatile Organics	8240
Acid Extractable Organics	8270
Base-Neutral Extractable Organics	8270
Explosives	NO EPA NUMBER*
Pesticides/PCB	8080
Metals	
Total Arsenic	3050 & 7061
Total Barium	3050 & 7080
Total Cadmium	3050 & 7131
Total Chromium	3050 & 7190
Total Mercury	3050 & 7471
Total Lead	3050 & 7421
Total Selenium	3050 & 7741
Total Silver	3050 & 7761
TEP Arsenic	7060
TEP Barium	7080
TEP Cadmium	7130
TEP Chromium	7190
TEP Mercury	7470
TEP Lead	7420
TEP Selenium	7740
TEP Silver	7760

* Water Quality Information Paper 23, Military Unique Munitions Analytical Procedures, United States Army Environmental Hygiene Agency, 16 March 1987, Appendix B, "High Performance Liquid Chromatography, Analysis of explosives in Soil.

Hazardous Waste Study No. 37-26-0127-88, Ft Stewart, GA, 24-31 Mar 87

TABLE A-3. LIST OF PARAMETERS USED IN THIS STUDY WITH DETECTION LIMITS OF EACH

3a. Volatile Organics

Parameter	Detection Limit µg/Kg
Benzene	0.5
Bromomethane	0.5
Bromodichloromethane	0.5
Bromoform	0.5
Carbon Tetrachloride	0.5
Chlorobenzene	0.5
Chloroethane	0.5
2 Chloroethylvinyl Ether	0.5
Chloroform	0.5
Chloromethane	0.5
Dibromochloromethane	0.5
1,2 Dichlorobenzene	0.5
1,3 Dichlorobenzene	0.5
1,4 Dichlorobenzene	0.5
1,1 Dichloroethane	0.5
1,2 Dichloroethane	0.5
1,1 Dichloroethene	0.5
1,2 Dichloroethene(trans)	0.5
1,2 Dichloropropane	0.5
1,3 Dichloropropene (cis)	0.5
1,2 Dichloropropene(trans)	0.5
Ethyl Benzene	0.5
Methylene Chloride	0.5
1,1,2,2 Tetrachloroethane	0.5
Tetrachloroethylene	0.5
1,1,1 Trichloroethane	0.5
1,1,2 Trichloroethane	0.5
Trichloroethylene	0.5
Trichloroflouromethane	0.5
Toluene	0.5
Vinyl Chloride	0.5

Hazardous Waste Study No. 37-26-0127-88, Ft Stewart, GA, 24-31 Mar 87

3b. Base-Neutral Extractable Organics

Parameter	Detection Limit µg/Kg
Acenaphthene	1
Acenaphthylene	1
Anthracene	1
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(ghi)perylene	2.5
Benzo(k)fluoroanthene	1
Chrysene	1
Dibenzo(ah)anthracene	2.5
Fluoranthene	1
Fluorene	1
Indeno(1,2,3cd)pyrene	2.5
Naphthalene	1
Phenanthrene	1
Pyrene	1
Hexachlorocyclopentadiene	1
Hexachlorobenzene	1
Hexachlorobutadiene	1
Hexachloroethane	1
1,2,4 Trichlorobenzene	1
1,2 Dichlorobenzene	1
1,3 Dichlorobenzene	1
1,4 Dichlorobenzene	1
2 Chloronaphthalene	1
Benzidine	1
3,3 Dichlorobenzidine	1
Benzyl butyl phthalate	1
Bis(2 ethylhexyl)phthalate	1
Di-n-butyl phthalate	1
Di-n-octyl phthalate	1
Diethyl phthalate	1
Dimethyl phthalate	1
N-nitrosodimethylamine	1
N-nitrosodiphenylamine	1
N-nitrosodi-n-propylamine	1
Isophorone	1
Nitrobenzene	1
2,4 Dinitrotoluene	1
2,6 Dinitrotoluene	1
1,2 Diphenylhydrazine	1
Bis(2 chloroethyl) ether	1
Bis(2 chloroethoxy)methane	1
Bis(2 chloroisopropyl)ether	1
4 Bromophenyl phenyl ether	1
4 Chlorophenyl phenyl ether	1

Hazardous Waste Study No. 37-26-0127-88, Ft Stewart, GA, 24-31 Mar 87

3c. Acid Extractable Organics

Parameter	Detection Limit µg/Kg
4 Chloro 3 methylphenol	2.5
2 Chlorophenol	2.5
2,4 Dichlorophenol	2.5
2,4 Dimethylphenol	2.5
2,4 Dinitrophenol	25
2 Methyl 4,6 dinitrophenol	25
2 Nitrophenol	2.5
4 Nitrophenol	2.5
Pentachlorophenol	2.5
Phenol	2.5
2,4,6 Trichlorophenol	2.5

3d. Pesticides and PCBs

Parameter	Detection Limit µg/Kg
BHC(ALPHA)	1
BHC(BETA)	1
BHC(GAMMA)	1
BHC(DELTA)	1
Heptachlor	1
Aldrin	1
Heptachlor Epoxide	1
4,4 DDE	1
Dieldrin	1
Endrin	1
4,4 DDD	1
4,4 DDT	1
Endosulfan Sulfate	1
Endosulfan I	1
Endosulfan II	1
Chlordane	1
Toxaphene	50
Endrin Aldehyde	1
PCB 1016	5
PCB 1221	5
PCB 1232	5
PCB 1242	5
PCB 1248	5
PCB 1254	5
PCB 1260	5

Hazardous Waste Study No. 37-26-0127-88, Ft Stewart, GA, 24-31 Mar 87

3e. Extractable Metals

Parameter	Detection Limit µg/Kg
	500
Silver	500
Arsenic	10,000
Barium	100
Cadmium	500
Chromium	20
Mercury	500
Lead	100
Selenium	

3f. Total Metals

Parameter	Detection Limit µg/g
	3.99
Silver	1.96
Arsenic	0.01
Barium	1.98
Cadmium	3.96
Chromium	0.040
Mercury	1.98
Lead	0.20
Selenium	

APPENDIX B

BOREHOLES

Borelogs for the Test Holes Drilled at
Wright AAF (Boreholes 1-4),
Zoucks Cemetery (Boreholes 5-9), and
Hunter AAF (Boreholes 10-13)

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US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

WRIGHT

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH 1

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
		Black asphalt	Sample 037 is residue found in the pit
		Yellowish red fine sandy loam(5yr5/8)	
	038	Gray (5yr 6/1) very fine sandy loam	
		Strong brown(7.5yr5/8)fine sandy loam	
		Yellowish red fine sandy loam(5yr5/8)	
	039	Mottled silt loam Strong brown (7.5yr5/8) Gray (7.5yr5/8) Red (10r 4/8)	
5			
		Red (10r 4/8) silt loam	
	040		
10		BOH	

AEHA Form 130, 1 Nov 82 B-39

Replaces HSHB Form 78, 1 Jun 80, which will be used.

142

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

WAA

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH 2

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	041	Very dark gray(5yr 3/1) sand Light yellowish brown sand(10yr6/4) Dark gray (10yr4/1)fine sandy loam	
		Brown (10yr5/3) fine sandy loam	
5		Yellowish red (5yr5/8) fine sandy loam	
		Red (10r4/8) silt loam	water encountered @8'
	042	Brownish yellow(10yr6/6)fine sandy loam	
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

WAA

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH 3

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	043	Dark brown (10yr3/3) loamy fine sand	
		Olive yellow (2.5y6/6)loamy fine sand	
		Red (2.5yr4/8) fine sandy loam	
5			
		Red (10r 4/8) silt loam	
	044		
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

WAA

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH 4

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
		Brown(10yr4/3)meduim sand	black surface stain
	045/048	Very dark gray fine sand (10yr3/1)	Samples taken in duplicate or split for quality control
		Dark yellowish brown (10yr4/4) fine sandy loam	
		Strong brown (7.5yr5/8) very fine sandy loam	
5			
		Red (10r5/8) silt loam	
	046/047		Water encountered @8.5'
		BOH	
10			Sample 049 is water from a rinse after washing the SP.

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH. 6

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	055	Dark grayish brown(10yr4/2)medium sand Yellow (10yr 7/6) fine sand	1"thick layer of black residue 6" Below surface
		White (10yr8/2) very fine sand	
		Brownish yellow (10yr6/8) fine sand	
		White (10yr8/2)medium sand	
5	056		Water encountered @5' black sand was found at the extreme lower end of the SP.
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127 DATE 31 March 1987

LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII BORE HOLE BH 5

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	050/051	Ash + burn residue + sand.	052 is a sample of the burn residue
		Brown (10yr5/3) medium sand	
		Strong brown(7.5yr5/8)loamy sand	
		Light yellowish brown(10yr6/4)medium sand	
		White (10yr8/2) medium sand	
5			
		Black medium sand	
	053/054		
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH. 7

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	057	Black fine sand	
		Yellow (10yr6/7) fine sand	
		White (10yr8/2) fine sand	
		Gray (10yr7/1) fine sand	
	058		Water encountered 4' Black subsurface layer in bottom of SP
5		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

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US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127 DATE 31 March 1987

LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII BORE HOLE BH 8

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN.	DESCRIPTION	REMARKS
	059	Black sand	
		Yellow (10yr7/6) medium sand	
		Light gray (10yr7/2) medium sand	
5	060		Water encountered @ 5'
		BOH	
10			

AEHA Form 130, 1 Nov 82 B-46

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH 9

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
		Brown (10yr4/3) medium to fine sand	
	061	Yellowish brown (10yr5/8) medium to fine sand	
		Very pale brown (10yr8/3) medium sand	
5	062	Light gray (10yr7/2) medium sand	Water encountered @ 5'
		BOH	
			063 is Quality Control sample on the SP washing
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

150

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

HAA

PROJECT 37-26-0127

DATE 31 March 1987

LOCATION Ft Stewart, GA

DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII

BORE HOLE BH 10

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	064	Very dark brown (10yr2/2) loamy fine sand	
		Brown (10yr5/3) fine sand	
5		Black (10yr2/1) fine sand	Oily odor
		Dark gray (7.5yr4/0) fine sand	↓
	065	Gray (2.5yr6/0) fine sand	Water encountered @ 8'
10		BOH	

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

HAA

US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127 DATE 31 March 1987

LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII BORE HOLE BH 11

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	066	Very dark brown (10yr2/2) fine sand	
		Yellowish brown (10yr5/6) fine sand	
		Very dark grayish brown (10yr3/2) fine sand	
		Very dark gray (7.5yr3/0) fine sand	Oily smell
5			
		Dark gray (7.5yr4/0) fine sand	
	067		Water encountered @ 7'
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80 which will be used.

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US ARMY ENVIRONMENTAL HYGIENE AGENCY

DRILLING LOG

(The proponent of this form is HSHB-ES)

HAA

PROJECT 37-26-0127 DATE 31 March 1987

LOCATION Ft Stewart, GA DRILLERS Hoddinott, Smithson, Maners

DRILL RIG Acker ADII BORE HOLE BH 12

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	068	Black fine sand	Oily odor
5			
		Pinkish gray (7.5yr6/2) fine sand	
	069	Dark grayish brown (10yr4/2) fine sand	
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

US ARMY ENVIRONMENTAL HYGIENE AGENCY

HAA

DRILLING LOG

(The proponent of this form is HSHB-ES)

PROJECT 37-26-0127

LOCATION Ft Stewart, GA

DRILL RIG Acker ADII

DATE 31 March 1987

DRILLERS Hoddinott, Smithson, Maners

BORE HOLE BH 13

DEPTH	SAMPLE TYPE / BLOWS PER 6 IN	DESCRIPTION	REMARKS
	070 071	Black (10yr2/1) fine sand Brown (7.5yr5/2) fine sand	Oily odor
		Black (10yr2/1) fine sand	
5		Dark grayish brown (10yr4/2) fine sand	
	072 073		
		BOH	
10			

AEHA Form 130, 1 Nov 82

Replaces HSHB Form 78, 1 Jun 80, which will be used.

APPENDIX C

ANALYTICAL RESULTS FOR THE SAMPLES COLLECTED FROM THE EOD SITES AND FIRE TRAINING AREAS OF FORT STEWART

H-T

TABLE C-1. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-1

Sample ID	Mercury	Barium	Lead	Cadmium	Chromium	Selenium	Arsenic
Units	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Detection Limit	0.04	0.01	1.98	1.98	3.92	0.2	1.96
#1 Center of Crater	0.392	11	60.2	19.6	3.92	BDL	BDL
#2 Duplicate of #1	0.389	11.2	59.9	9.98	BDL	BDL	BDL
#3 Transect Member	0.398	10.7	34.8	1.99	BDL	0.219	BDL
#4 Transect Member	0.394	9.66	41.8	3.94	BDL	BDL	BDL
#5 Transect Member	0.396	9.71	28.5	BDL	BDL	BDL	3.96
#6 Transect Member	0.396	15.7	184	3.95	BDL	BDL	7.93
#7 Transect Member	0.359	16.7	148	10.8	BDL	BDL	1.8
#8 Transect Member	0.38	17.9	144	15.2	BDL	BDL	1.9
#9 Transect Member	0.396	8.32	53.3	3.96	BDL	BDL	1.98
#10 Transect Member	0.397	11.7	35.3	21.8	BDL	0.199	7.94

BDL - below detectable limits

TABLE C-2. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-2

Sample ID	Mercury	Barium	Lead	Cadmium	Chromium	Selenium	Arsenic
Units	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
Detection Limit	0.04	0.01	1.98	1.98	3.92	0.2	1.96
#11 Center of Crater	3.97	11.5	10	3.97	4.78	0.259	11.9
#12 Duplicate of #11	0.368	10.7	101	BDL	4.6	BDL	12.9
#13 Transect Member	0.38	5.33	88.8	BDL	BDL	BDL	7.61
#14 Transect Member	0.395	5.93	114	19.8	4.55	BDL	9.89
#15 Transect Member	0.391	7.03	30.1	25.4	BDL	BDL	3.91
#16 Transect Member	0.371	7.42	55.5	BDL	BDL	BDL	9.28
#17 Transect Member	0.429	9.23	116	2.15	BDL	BDL	10.7
#18 Transect Member	0.373	6.9	35.8	BDL	BDL	BDL	5.59
#19 Transect Member	0.399	6.39	47.3	BDL	BDL	BDL	5.96
#20 Transect Member	0.397	6.78	41.3	1.99	BDL	BDL	3.91

BDL - below detectable limits

TABLE C-3. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-3

Sample ID		Parameters						
		Mercury	Barium	Lead	Cadmium	Chromium	Selenium	Arsenic
	Units	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
	Detection Limit	0.04	0.01	1.98	1.98	3.92	0.2	1.96
#21 Center of Crater		0.394	11	566	BDL	BDL	BDL	3.94
#22 Duplicate of #21		0.396	9.72	460	BDL	BDL	BDL	1.98
#23 Transect Member		0.399	15.4	97.8	24	10.4	BDL	9.91
#24 Transect Member		0.395	50.6	3281	1.98	BDL	BDL	5.93
#25 Transect Member		0.4	20.6	164	26	9	BDL	6
#26 Transect Member		0.398	23.7	98.1	BDL	BDL	BDL	5.97

BDL - below detectable limits

TABLE C-4. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, AREA EOD-4

Sample ID		Parameters							
		Mercury	Barium	Lead	Cadmium	Chromium	Selenium	Arsenic	* TEP Cadmium
	Units	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	mg/L
	Detection Limit	0.04	0.01	1.98	1.98	3.96	0.2	1.96	0.1
#28 Center of Crater		0.398	4.18	64.7	53.8	BDL	BDL	3.98	BDL
#29 Duplicate of #28		0.414	4.35	166	60	4.35	0.787	4.14	BDL
#30 Transect Member		0.389	8.17	175	518	3.69	BDL	21.4	0.43
#31 Transect Member		0.395	5.14	45.8	1.98	BDL	BDL	1.98	BDL
#32 Transect Member		0.402	7.24	35.8	2.01	BDL	BDL	6.04	BDL
#33 Transect Member		0.395	4.54	432	73.1	4.34	BDL	3.95	BDL
#34 Transect Member		0.398	2.78	99.6	1.99	BDL	BDL	BDL	BDL
#35 Transect Member		0.4	3.2	191	12	BDL	BDL	7.99	BDL
#36 Transect Member		0.4	3.2	28	BDL	BDL	BDL	2	BDL

BDL - below detectable limits

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Ft. Stewart

TABLE C-5. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, FIRE TRAINING PIT - WRIGHT AAF

Sample ID	Depth (ft)	Units / Detection Limit	Mercury μg/g 0.04	Barium μg/g 0.01	Lead μg/g 1.98	Chromium μg/g 3.92	Arsenic μg/g 1.96	bis(2-ethylhexyl) Phthalate μg/Kg 1	Phen-anthrene μg/Kg 1	Fluoranthen ~~Phen-anthrene~~ μg/Kg 1	Benzo(a) anthra-cene μg/Kg 1	Benzo(a) pyrene μg/Kg 1	Indeno (1,2,3-cd) pyrene μg/Kg 2.5
#37 Pit Residue			0.398	5.58	147	BDL	65.7	3,000	7,900	BDL	BDL	BDL	BDL
#38 Borehole 1	0-1		0.398	15.5	33.8	4.57	3.98	BDL	BDL	BDL	BDL	BDL	BDL
#39 Borehole 1	4-5		0.392	12	82.4	17.5	15.7	BDL	BDL	BDL	BDL	BDL	BDL
#40 Borehole 1	9-10		0.4	15.4	42	13.4	16	2,500	1,700	5,100	200	1,108	500
#41 Borehole 1	0-1		0.39	12.5	82	5.27	3.9	BDL	BDL	BDL	BDL	BDL	BDL
#42 Borehole 1	7.5-8.5		0.398	7.77	43.8	4.58	1.99	BDL	BDL	BDL	BDL	BDL	BDL
#43 Borehole 1	0-1		0.39	13.6	31.9	BDL	2	200	BDL	BDL	BDL	BDL	BDL
#44 Borehole 1	7.5-8.5		0.394	3.74	25.6	4.13	3.94	BDL	BDL	BDL	BDL	BDL	BDL
#45 Borehole 1	0-1		0.399	5.88	608	7.06	3.92	BDL	BDL	BDL	BDL	BDL	BDL
#46 Borehole 1	7.5-8.5		0.394	4.34	60.7	8.88	9.86	BDL	BDL	BDL	BDL	BDL	BDL
#47 Borehole 1			0.391	4.89	74.5	10.8	9.78	BDL	BDL	BDL	BDL	BDL	BDL
#48 Borehole 1			0.392	7.45	43.6	6.08	3.92	BDL	BDL	BDL	BDL	BDL	BDL
#49 Borehole 1			BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

BDL - below detectable limits

TABLE C-6. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, FIRE TRAINING PIT - ZOUCK'S CEMETERY

Sample ID	Depth (ft)	Units / Detection Limit	Mercury μg/g 0.04	Barium μg/g 0.01	Lead μg/g 1.98	Chromium μg/g 3.92	Arsenic μg/g 1.96	Cadmium μg/g 1.98	Selenium μg/g 0.2
#50 Borehole 5	0-1		0.391	8.32	61.4	BDL	3.96	3.96	BDL
#51 Duplicate of #50			0.391	8.98	82	BDL	3.91	BDL	BDL
#52 Burn Residue			0.396	20.5	505	5.9	5.9	25.7	0.317
#53 Borehole 5	7.5-8.5		0.396	1.98	15.8	11.9	11.9	4.99	BDL
#54 Duplicate of #53			0.397	1.99	11.9	10.3	13.9	BDL	BDL
#55 Borehole 6	0-1		0.397	2.97	BDL	BDL	3.92	BDL	BDL
#56 Borehole 6	4.5-5.5		0.398	5.77	31.9	7.17	1.99	BDL	BDL
#57 Borehole 7	0-1		0.391	2.93	19.6	BDL	1.96	BDL	BDL
#58 Borehole 7	4-5		0.394	1.97	BDL	BDL	BDL	BDL	BDL
#59 Borehole 8	0-1		0.397	10.7	71.4	BDL	5.95	BDL	BDL
#60 Borehole 8	4-5		0.395	3.16	19.8	BDL	1.98	BDL	BDL
#61 Borehole 9 Backgrd	0-1		0.399	6.19	25.9	BDL	3.99	BDL	BDL
#62 Borehole 9 Backgrd	5-6		0.398	1.99	3.98	BDL	BDL	BDL	BDL
#62 Quality Control Wash			BDL	BDL	BDL	BDL	BDL	BDL	BDL

BDL below detectable limits

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TABLE C-7. CHEMICAL PARAMETERS FOUND IN THE LABORATORY ANALYSIS, FIRE TRAINING PIT - HUNTER AIRFIELD

			Parameters													
Sample ID	Depth (ft)	Units Detection Limit	Mercury µg/g 0.04	Barium µg/g 0.81	Lead µg/g 1.98	Chromium µg/g 3.92	Arsenic µg/g 1.96	Cadmium µg/g 1.98	Selenium µg/g 0.2	Bis (2 ethylhexyl) Phthalate µ/Kg 1	Phenanthrene µ/Kg 1	Fluorene µ/Kg 1	Di n late butyl phthalate µ/Kg 1	Naphthalene µ/Kg 1	2 Methylnaphthalene µ/Kg 1	Diethyl phthalate µ/Kg 1
#64 Borehole 10	0-1		0.4	64.4	645	12.8	5.99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#65 Borehole 10	7.5 8.5		0.390	9.19	55.9	BDL	2	BDL	BDL	1700	900	400	1300	10000	19000	BDL
#66 Borehole 11	0 1		0.388	33.5	1,090	4.16	13.9	1.99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#67 Borehole 11	7.5 8.5		0.388	18.1	73.7	BDL	3.88	BDL	BDL	900	BDL	BDL	600	7000	12000	BDL
#68 Borehole 12	0 1		0.4	7.19	102	5.19	4	BDL	0.799	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#69 Borehole 12	6.5 7.5		0.387	8.12	19.3	BDL	BDL	BDL	0.6	300	200	200	2400	5000	10000	200
#70 Borehole 13	0 1		0.388	19.8	1,185	9.1	7.75	3.87	0.331	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#71 Duplicate of #70			0.4	16.8	1,152	6.8	8	2	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#72 Borehole 13	6 7.5		0.394	8.28	13.8	BDL	1.94	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#73 Duplicate of #72			0.390	10.3	27.8	BDL	3.98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#74 Quality Control Wash			BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
#75 Alcohol used in QA Washings			BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

BDL below detectable limits

APPENDIX D

REFERENCES

1. AR 420-90, 1 February 1985, Fire Protection.

2. Title 40, Code of Federal Regulations (CFR), 1986 rev, Part 261, Identification and Listing of Hazardous Wastes.

3. Title 40, CFR, 1986 rev, Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

4. Title 40, CFR, 1986 rev, Part 270, EPA Administered Permit Programs: The Hazardous Waste Permit Program.

5. EPA Publication SW-846, "Test Methods for Evaluating Solid Waste," SW-846, Second Edition, Office of Solid Waste, Washington DC, 1984.

6. United States Department of Agriculture, Soil Survey of Bryan and Chatham Counties, Georgia, March 1974.

7. United States Department of Agriculture, Soil Survey of Liberty and Long Counties, Georgia, October 1982.

8. 24th Inf Div (Mech) & Fort Stewart Reg 385-14, 30 November 1984, Safety, POST RANGE REGULATION.

9. Rule and Regulations of the State of Georgia, Title 391, Department of Natural Resources, Article 3, Environmental Protection, Chapter 11, Hazardous Waste Management, Effective 17 September 1980.

10. EPA Publication No. 600/4-83-020, August 1983, "Preparation of Soil Sampling Protocol: Techniques and Strategies.

11. Letter, U.S. Army Toxic and Hazardous Materials Agency, DRXTH-AS-IA-82334, 31 May 1983, Installation Assessment of Head Quarters, 24th Infantry Division and Fort Stewart, GA, Report No. 334.

12. Letter, USAEHA, HSHB-ME-SE, 17 February 1987, Subject: Notification of Visit, Hazardous Waste Study No. 37-26-0127-87, Fort Stewart, GA.

13. Koch, George S. and Robert F. Link, Statistical analysis of geological data, 1970, Dover Publications, Inc., New York.

14. Till, Roger, Statistical methods for the earth scientist, Macmillan Press Ltd, London, 1982.

15. Letter, from J. Leonard Ledbetter, Director, Georgia Department of Natural Resources to Major M. E. Stovall, DEH, Fort Stewart, 14 August 1987, Subject: Transmittal of Fort Stewart's Part B Hazardous Waste Facility Permit.

16. Title 40, CFR, 1986 Rev, Part 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

APPENDIX C

TOPOGRAPHIC SURVEY OF A MONITOR WELL SITE

REPLACE THIS PAGE WITH SCANNED MAP!

APPENDIX D

TELOG® DATA

WMW 2-1

WMW2-1	Time	Min	Mean	Max
07/18/91	12:31:06	-0.05	10.45	12.03
07/18/91	13:31:06	10.82	10.94	11.1
07/18/91	14:31:06	10.82	10.94	11.03
07/18/91	15:31:06	10.87	11.01	11.08
07/18/91	16:31:06	10.96	10.98	11.05
07/18/91	17:31:06	10.98	11.01	11.08
07/18/91	18:31:06	11.01	11.01	11.03
07/18/91	19:31:06	10.98	11.01	11.05
07/18/91	20:31:06	10.96	10.98	11.03
07/18/91	21:31:06	10.96	10.98	11.03
07/18/91	22:31:06	10.96	10.96	11.01
07/18/91	23:31:06	10.96	10.98	10.98
07/19/91	00:31:06	10.96	10.98	11.01
07/19/91	01:31:06	10.96	10.98	11.03
07/19/91	02:31:06	10.98	11.01	11.05
07/19/91	03:31:06	10.98	11.01	11.03
07/19/91	04:31:06	10.96	10.98	11.03
07/19/91	05:31:06	10.94	10.96	11.01
07/19/91	06:31:06	10.87	10.91	10.98
07/19/91	07:31:06	10.82	10.87	10.96
07/19/91	08:31:06	10.8	10.87	10.94
07/19/91	09:31:06	10.75	10.84	10.94
07/19/91	10:31:06	10.8	10.84	10.94
07/19/91	11:31:06	10.82	10.87	10.94
07/19/91	12:31:06	10.8	10.87	10.98
07/19/91	13:31:06	10.8	10.91	11.12
07/19/91	14:31:06	10.91	10.96	11.08
07/19/91	15:31:06	10.94	10.96	10.98
07/19/91	16:31:06	10.96	10.98	11.01
07/19/91	17:31:06	10.96	10.98	11.01
07/19/91	18:31:06	10.98	10.98	11.01
07/19/91	19:31:06	10.98	11.01	11.05
07/19/91	20:31:06	11.01	11.03	11.05
07/19/91	21:31:06	11.01	11.03	11.05
07/19/91	22:31:06	11.01	11.05	11.08
07/19/91	23:31:06	11.03	11.05	11.1
07/20/91	00:31:06	11.03	11.08	11.1
07/20/91	01:31:06	11.05	11.08	11.1
07/20/91	02:31:06	11.05	11.08	11.12
07/20/91	03:31:06	11.08	11.1	11.12
07/20/91	04:31:06	11.08	11.1	11.12
07/20/91	05:31:06	11.05	11.08	11.12
07/20/91	06:31:06	11.01	11.05	11.1
07/20/91	07:31:06	10.96	11.03	11.08
07/20/91	08:31:06	10.98	11.03	11.08
07/20/91	09:31:06	10.91	10.98	11.08
07/20/91	10:31:06	10.89	10.98	11.05
07/20/91	11:31:06	10.94	11.03	11.17
07/20/91	12:31:06	10.91	11.08	11.26
07/20/91	13:31:06	11.08	11.12	11.17
07/20/91	14:31:06	11.1	11.12	11.17
07/20/91	15:31:06	11.12	11.15	11.17
07/20/91	16:31:06	11.12	11.15	11.17
07/20/91	17:31:06	11.15	11.17	11.19
07/20/91	18:31:06	11.17	11.17	11.19

07/20/91	19:31:06	11.17	11.17	11.19
07/20/91	20:31:06	11.17	11.17	11.19
07/20/91	21:31:06	11.17	11.19	11.19
07/20/91	22:31:06	11.17	11.19	11.24
07/20/91	23:31:06	11.19	11.22	11.24
07/21/91	00:31:06	11.22	11.24	11.26
07/21/91	01:31:06	11.24	11.26	11.26
07/21/91	02:31:06	11.26	11.26	11.29
07/21/91	03:31:06	11.26	11.26	11.29
07/21/91	04:31:06	11.24	11.26	11.26
07/21/91	05:31:06	11.22	11.22	11.24
07/21/91	06:31:06	11.17	11.19	11.24
07/21/91	07:31:06	11.1	11.15	11.19
07/21/91	08:31:06	11.08	11.12	11.19
07/21/91	09:31:06	11.03	11.12	11.26
07/21/91	10:31:06	10.98	11.12	11.24
07/21/91	11:31:06	10.96	11.12	11.26
07/21/91	12:31:06	10.98	11.17	11.36
07/21/91	13:31:06	11.05	11.17	11.26
07/21/91	14:31:06	11.03	11.17	11.33
07/21/91	15:31:06	11.1	11.19	11.29
07/21/91	16:31:06	11.19	11.24	11.31
07/21/91	17:31:06	11.19	11.22	11.29
07/21/91	18:31:06	11.17	11.22	11.26
07/21/91	19:31:06	11.19	11.22	11.24
07/21/91	20:31:06	11.19	11.22	11.24
07/21/91	21:31:06	11.17	11.22	11.24
07/21/91	22:31:06	11.17	11.19	11.22
07/21/91	23:31:06	11.17	11.22	11.22
07/22/91	00:31:06	11.17	11.19	11.22
07/22/91	01:31:06	11.17	11.19	11.22
07/22/91	02:31:06	11.17	11.22	11.24
07/22/91	03:31:06	11.17	11.19	11.24
07/22/91	04:31:06	11.15	11.19	11.22
07/22/91	05:31:06	11.12	11.15	11.17
07/22/91	06:31:06	11.05	11.12	11.17
07/22/91	07:31:06	11.03	11.08	11.12
07/22/91	08:31:06	11.01	11.03	11.08
07/22/91	09:31:06	10.94	11.01	11.1
07/22/91	10:31:06	10.94	11.01	11.08
07/22/91	11:31:06	10.98	11.03	11.12
07/22/91	12:31:06	10.94	11.01	11.12
07/22/91	13:31:06	10.94	11.05	11.17
07/22/91	14:31:06	10.91	11.03	11.17
07/22/91	15:31:06	10.98	11.05	11.15
07/22/91	16:31:06	11.03	11.08	11.15
07/22/91	17:31:06	11.08	11.1	11.12
07/22/91	18:31:06	11.05	11.08	11.12
07/22/91	19:31:06	11.05	11.08	11.1
07/22/91	20:31:06	11.03	11.05	11.1
07/22/91	21:31:06	11.01	11.03	11.03
07/22/91	22:31:06	11.01	11.01	11.03
07/22/91	23:31:06	11.01	11.03	11.05
07/23/91	00:31:06	11.01	11.03	11.05
07/23/91	01:31:06	11.03	11.03	11.05
07/23/91	02:31:06	11.01	11.03	11.05

07/23/91	03:31:06	11.01	11.03	11.03
07/23/91	04:31:06	10.98	11.01	11.03
07/23/91	05:31:06	10.96	10.98	11.01
07/23/91	06:31:06	10.91	10.96	11.01
07/23/91	07:31:06	10.87	10.91	10.96
07/23/91	08:31:06	10.8	10.87	10.94
07/23/91	09:31:06	10.77	10.84	10.91
07/23/91	10:31:06	10.8	10.87	10.94
07/23/91	11:31:06	10.77	10.84	11.03
07/23/91	12:31:06	10.77	10.87	11.01
07/23/91	13:31:06	10.75	10.87	11.03
07/23/91	14:31:06	10.77	10.91	11.05
07/23/91	15:31:06	10.84	10.89	10.96
07/23/91	16:31:06	10.87	10.91	10.96
07/23/91	17:31:06	10.91	10.94	10.98
07/23/91	18:31:06	10.89	10.94	10.98
07/23/91	19:31:06	10.89	10.91	10.96
07/23/91	20:31:06	10.87	10.89	10.94
07/23/91	21:31:06	10.84	10.87	10.89
07/23/91	22:31:06	10.82	10.84	10.87
07/23/91	23:31:06	10.82	10.87	10.87
07/24/91	00:31:06	10.82	10.84	10.89
07/24/91	01:31:06	10.84	10.84	10.89
07/24/91	02:31:06	10.84	10.84	10.87
07/24/91	03:31:06	10.82	10.84	10.84
07/24/91	04:31:06	10.8	10.82	10.84
07/24/91	05:31:06	10.8	10.8	10.82
07/24/91	06:31:06	10.73	10.77	10.8
07/24/91	07:31:06	10.66	10.73	10.8
07/24/91	08:31:06	10.61	10.68	10.75
07/24/91	09:31:06	10.59	10.64	10.68
07/24/91	10:31:06	10.57	10.64	10.71
07/24/91	11:31:06	10.54	10.61	10.73
07/24/91	12:31:06	10.57	10.64	10.75
07/24/91	13:31:06	10.52	10.64	10.75
07/24/91	14:31:06	10.57	10.64	10.75
07/24/91	15:31:06	10.59	10.66	10.75
07/24/91	16:31:06	10.64	10.68	10.73
07/24/91	17:31:06	10.66	10.71	10.73
07/24/91	18:31:06	10.64	10.68	10.73
07/24/91	19:31:06	10.61	10.64	10.68
07/24/91	20:31:06	10.57	10.61	10.66
07/24/91	21:31:06	10.54	10.59	10.66
07/24/91	22:31:06	10.57	10.59	10.64
07/24/91	23:31:06	10.54	10.57	10.59
07/25/91	00:31:06	10.54	10.59	10.61
07/25/91	01:31:06	10.61	10.64	10.66
07/25/91	02:31:06	10.61	10.66	10.66
07/25/91	03:31:06	10.64	10.66	10.68
07/25/91	04:31:06	10.61	10.64	10.68
07/25/91	05:31:06	10.61	10.64	10.66
07/25/91	06:31:06	10.59	10.61	10.66
07/25/91	07:31:06	10.57	10.61	10.66
07/25/91	08:31:06	10.5	10.57	10.64
07/25/91	09:31:06	10.47	10.52	10.59
07/25/91	10:31:06	10.5	10.54	10.61

07/25/91	11:31:06	10.5	10.54	10.64
07/25/91	12:31:06	10.5	10.54	10.66
07/25/91	13:31:06	10.54	10.64	10.73
07/25/91	14:31:06	10.57	10.61	10.68
07/25/91	15:31:06	10.57	10.61	10.66
07/25/91	16:31:06	10.59	10.61	10.66
07/25/91	17:31:06	10.59	10.64	10.66
07/25/91	18:31:06	10.59	10.61	10.66
07/25/91	19:31:06	10.61	10.64	10.66
07/25/91	20:31:06	10.61	10.61	10.66
07/25/91	21:31:06	10.61	10.64	10.66
07/25/91	22:31:06	10.59	10.61	10.64
07/25/91	23:31:06	10.59	10.61	10.61
07/26/91	00:31:06	10.61	10.61	10.66
07/26/91	01:31:06	10.61	10.68	10.68
07/26/91	02:31:06	10.64	10.66	10.71
07/26/91	03:31:06	10.66	10.68	10.71
07/26/91	04:31:06	10.64	10.68	10.71
07/26/91	05:31:06	10.61	10.66	10.68
07/26/91	06:31:06	10.57	10.61	10.66
07/26/91	07:31:06	10.54	10.59	10.64
07/26/91	08:31:06	10.52	10.59	10.64
07/26/91	09:31:06	10.47	10.54	10.59
07/26/91	10:31:06	10.47	10.54	10.71
07/26/91	11:31:06	10.43	10.59	10.73
07/26/91	12:31:06	10.45	10.59	10.73
07/26/91	13:31:06	10.45	10.61	10.75
07/26/91	14:31:06	10.57	10.66	10.77
07/26/91	15:31:06	10.54	10.64	10.71
07/26/91	16:31:06	10.61	10.66	10.75
07/26/91	17:31:06	10.61	10.66	10.71
07/26/91	18:31:06	10.61	10.64	10.68
07/26/91	19:31:06	10.59	10.61	10.66
07/26/91	20:31:06	10.57	10.59	10.64
07/26/91	21:31:06	10.59	10.59	10.64
07/26/91	22:31:06	10.59	10.59	10.61
07/26/91	23:31:06	10.59	10.61	10.61
07/27/91	00:31:06	10.61	10.61	10.64
07/27/91	01:31:06	10.61	10.64	10.64
07/27/91	02:31:06	10.61	10.64	10.64
07/27/91	03:31:06	10.61	10.61	10.64
07/27/91	04:31:06	10.59	10.61	10.61
07/27/91	05:31:06	10.59	10.59	10.61
07/27/91	06:31:06	10.54	10.59	10.64
07/27/91	07:31:06	10.5	10.54	10.61
07/27/91	08:31:06	10.45	10.52	10.59
07/27/91	09:31:06	10.43	10.5	10.64
07/27/91	10:31:06	10.36	10.5	10.66
07/27/91	11:31:06	10.4	10.5	10.66
07/27/91	12:31:06	10.43	10.54	10.71
07/27/91	13:31:06	10.43	10.5	10.66
07/27/91	14:31:06	10.43	10.52	10.66
07/27/91	15:31:06	10.52	10.59	10.68
07/27/91	16:31:06	10.54	10.59	10.64
07/27/91	17:31:06	10.54	10.57	10.61
07/27/91	18:31:06	10.52	10.54	10.61

07/27/91 19:31:06	10.52	10.54	10.57
07/27/91 20:31:06	10.5	10.52	10.57
07/27/91 21:31:06	10.5	10.52	10.54
07/27/91 22:31:06	10.5	10.5	10.52
07/27/91 23:31:06	10.5	10.5	10.52
07/28/91 00:31:06	10.5	10.5	10.52
07/28/91 01:31:06	10.5	10.52	10.54
07/28/91 02:31:06	10.52	10.52	10.54
07/28/91 03:31:06	10.5	10.52	10.54
07/28/91 04:31:06	10.5	10.5	10.52
07/28/91 05:31:06	10.47	10.5	10.54
07/28/91 06:31:06	10.4	10.45	10.52
07/28/91 07:31:06	10.36	10.4	10.47
07/28/91 08:31:06	10.33	10.4	10.47
07/28/91 09:31:06	10.31	10.36	10.45
07/28/91 10:31:06	10.29	10.36	10.52
07/28/91 11:31:06	10.29	10.36	10.5
07/28/91 12:31:06	10.26	10.4	10.47
07/28/91 13:31:06	10.24	10.4	10.57
07/28/91 14:31:06	10.29	10.38	10.47
07/28/91 15:31:06	10.33	10.4	10.5
07/28/91 16:31:06	10.38	10.4	10.47
07/28/91 17:31:06	10.4	10.43	10.5
07/28/91 18:31:06	10.4	10.45	10.47
07/28/91 19:31:06	10.43	10.45	10.5
07/28/91 20:31:06	10.45	10.47	10.52
07/28/91 21:31:06	10.47	10.47	10.5
07/28/91 22:31:06	10.5	10.52	10.54
07/28/91 23:31:06	10.52	10.54	10.57
07/29/91 00:31:06	10.57	10.59	10.61
07/29/91 01:31:06	10.61	10.64	10.66
07/29/91 02:31:06	10.64	10.66	10.68
07/29/91 03:31:06	10.68	10.71	10.73
07/29/91 04:31:06	10.71	10.73	10.77
07/29/91 05:31:06	10.71	10.75	10.77
07/29/91 06:31:06	10.68	10.73	10.77
07/29/91 07:31:06	10.66	10.71	10.77
07/29/91 08:31:06	10.61	10.71	10.77
07/29/91 09:31:06	10.61	10.71	10.82
07/29/91 10:31:06	10.59	10.73	10.84
07/29/91 11:31:06	10.59	10.73	10.87
07/29/91 12:31:06	10.64	10.75	10.94
07/29/91 13:31:06	10.71	10.82	10.94
07/29/91 14:31:06	10.73	10.82	10.96
07/29/91 15:31:06	10.77	10.91	11.17
07/29/91 16:31:06	10.84	10.89	10.96
07/29/91 17:31:06	10.87	10.91	10.96
07/29/91 18:31:06	10.89	10.91	10.96
07/29/91 19:31:06	10.91	10.96	10.98
07/29/91 20:31:06	10.94	10.94	10.98
07/29/91 21:31:06	10.94	10.96	10.98
07/29/91 22:31:06	10.96	10.98	10.98
07/29/91 23:31:06	10.98	10.98	11.01
07/30/91 00:31:06	11.01	11.03	11.05
07/30/91 01:31:06	11.03	11.05	11.1
07/30/91 02:31:06	11.05	11.08	11.12

07/30/91	03:31:06	11.08	11.1	11.12
07/30/91	04:31:06	11.08	11.1	11.15
07/30/91	05:31:06	11.08	11.1	11.15
07/30/91	06:31:06	11.03	11.08	11.12
07/30/91	07:31:06	10.98	11.05	11.15
07/30/91	08:31:06	10.94	11.05	11.17
07/30/91	09:31:06	10.94	11.05	11.12
07/30/91	10:31:06	11.01	11.05	11.12
07/30/91	11:31:06	10.94	11.05	11.22
07/30/91	12:31:06	10.94	11.1	11.26
07/30/91	13:31:06	11.08	11.17	11.26
07/30/91	14:31:06	11.05	11.17	11.22
07/30/91	15:31:06	11.12	11.15	11.22
07/30/91	16:31:06	11.12	11.17	11.24
07/30/91	17:31:06	11.19	11.24	11.24
07/30/91	18:31:06	11.19	11.19	11.24
07/30/91	19:31:06	11.19	11.22	11.24
07/30/91	20:31:06	11.22	11.24	11.26
07/30/91	21:31:06	11.24	11.26	11.31
07/30/91	22:31:06	11.29	11.31	11.33
07/30/91	23:31:06	11.26	11.31	11.33
07/31/91	00:31:06	11.29	11.31	11.36
07/31/91	01:31:06	11.31	11.33	11.38
07/31/91	02:31:06	11.33	11.36	11.38
07/31/91	03:31:06	11.33	11.36	11.38
07/31/91	04:31:06	11.33	11.36	11.38
07/31/91	05:31:06	11.31	11.36	11.38
07/31/91	06:31:06	11.31	11.31	11.36
07/31/91	07:31:06	11.29	11.31	11.31
07/31/91	08:31:06	11.29	11.31	11.36
07/31/91	09:31:06	11.29	11.31	11.33
07/31/91	10:31:06	11.29	11.31	11.36
07/31/91	11:31:06	11.31	11.33	11.4
07/31/91	12:31:06	11.31	11.36	11.4
07/31/91	13:31:06	11.33	11.38	11.43
07/31/91	14:31:06	11.29	11.4	11.49
07/31/91	15:31:06	11.31	11.4	11.45
07/31/91	16:31:06	11.38	11.43	11.45
07/31/91	17:31:06	11.38	11.4	11.43
07/31/91	18:31:06	11.4	11.4	11.45
07/31/91	19:31:06	11.4	11.43	11.43
07/31/91	20:31:06	11.4	11.43	11.43
07/31/91	21:31:06	11.4	11.4	11.43
07/31/91	22:31:06	11.38	11.4	11.4
07/31/91	23:31:06	11.4	11.4	11.43
08/01/91	00:31:06	11.4	11.4	11.43
08/01/91	01:31:06	11.4	11.43	11.45
08/01/91	02:31:06	11.43	11.43	11.45
08/01/91	03:31:06	11.43	11.43	11.45
08/01/91	04:31:06	11.43	11.43	11.45
08/01/91	05:31:06	11.43	11.43	11.45
08/01/91	06:31:06	11.4	11.43	11.43
08/01/91	07:31:06	11.38	11.43	11.47
08/01/91	08:31:06	11.38	11.43	11.45
08/01/91	09:31:06	11.4	11.45	11.49
08/01/91	10:31:06	11.38	11.45	11.54

08/01/91	11:31:06	11.4	11.47	11.54
08/01/91	12:31:06	11.33	11.47	11.56
08/01/91	13:31:06	11.36	11.47	11.61
08/01/91	14:31:06	11.38	11.49	11.61
08/01/91	15:31:06	11.45	11.54	11.61
08/01/91	16:31:06	11.49	11.54	11.59
08/01/91	17:31:06	11.52	11.54	11.56
08/01/91	18:31:06	11.52	11.54	11.56
08/01/91	19:31:06	11.49	11.54	11.56
08/01/91	20:31:06	11.49	11.49	11.52
08/01/91	21:31:06	11.49	11.49	11.52
08/01/91	22:31:06	11.49	11.52	11.52
08/01/91	23:31:06	11.49	11.52	11.52
08/02/91	00:31:06	11.49	11.49	11.52
08/02/91	01:31:06	11.49	11.52	11.52
08/02/91	02:31:06	11.49	11.52	11.52
08/02/91	03:31:06	11.49	11.52	11.52
08/02/91	04:31:06	11.49	11.52	11.52
08/02/91	05:31:06	11.49	11.49	11.52
08/02/91	06:31:06	11.47	11.49	11.52
08/02/91	07:31:06	11.47	11.49	11.52
08/02/91	08:31:06	11.45	11.52	11.54
08/02/91	09:31:06	11.43	11.47	11.54
08/02/91	10:31:06	11.36	11.47	11.54
08/02/91	11:31:06	11.36	11.47	11.59
08/02/91	12:31:06	11.45	11.52	11.68
08/02/91	13:31:06	11.52	11.54	11.61
08/02/91	14:31:06	11.54	11.56	11.59
08/02/91	15:31:06	11.56	11.56	11.61
08/02/91	16:31:06	11.56	11.59	11.61
08/02/91	17:31:06	11.56	11.59	11.61
08/02/91	18:31:06	11.59	11.61	11.61
08/02/91	19:31:06	11.56	11.61	11.63
08/02/91	20:31:06	11.54	11.56	11.59
08/02/91	21:31:06	11.54	11.56	11.61
08/02/91	22:31:06	11.54	11.54	11.59
08/02/91	23:31:06	11.54	11.59	11.59
08/03/91	00:31:06	11.54	11.54	11.59
08/03/91	01:31:06	11.54	11.56	11.59
08/03/91	02:31:06	11.54	11.54	11.59
08/03/91	03:31:06	11.54	11.59	11.59
08/03/91	04:31:06	11.52	11.52	11.59
08/03/91	05:31:06	11.49	11.52	11.56
08/03/91	06:31:06	11.52	11.54	11.54
08/03/91	07:31:06	11.45	11.47	11.52
08/03/91	08:31:06	11.31	11.45	11.52
08/03/91	09:31:06	11.31	11.4	11.49
08/03/91	10:31:06	11.31	11.38	11.54
08/03/91	11:31:06	11.26	11.4	11.52
08/03/91	12:31:06	11.31	11.4	11.56
08/03/91	13:31:06	11.29	11.43	11.63
08/03/91	14:31:06	11.31	11.45	11.66
08/03/91	15:31:06	11.38	11.47	11.59
08/03/91	16:31:06	11.36	11.45	11.49
08/03/91	17:31:06	11.4	11.45	11.49
08/03/91	18:31:06	11.43	11.45	11.49

08/03/91	19:31:06	11.4	11.43	11.47
08/03/91	20:31:06	11.4	11.43	11.45
08/03/91	21:31:06	11.4	11.43	11.45
08/03/91	22:31:06	11.4	11.43	11.45
08/03/91	23:31:06	11.4	11.43	11.45
08/04/91	00:31:06	11.4	11.43	11.45
08/04/91	01:31:06	11.4	11.43	11.45
08/04/91	02:31:06	11.4	11.43	11.45
08/04/91	03:31:06	11.38	11.4	11.45
08/04/91	04:31:06	11.36	11.38	11.43
08/04/91	05:31:06	11.33	11.36	11.4
08/04/91	06:31:06	11.29	11.33	11.36
08/04/91	07:31:06	11.24	11.29	11.33
08/04/91	08:31:06	11.19	11.24	11.31
08/04/91	09:31:06	11.17	11.24	11.31
08/04/91	10:31:06	11.12	11.19	11.29
08/04/91	11:31:06	11.15	11.22	11.36
08/04/91	12:31:06	11.12	11.22	11.38
08/04/91	13:31:06	11.15	11.22	11.36
08/04/91	14:31:06	11.15	11.22	11.33
08/04/91	15:31:06	11.17	11.24	11.31
08/04/91	16:31:06	11.24	11.26	11.31
08/04/91	17:31:06	11.26	11.29	11.33
08/04/91	18:31:06	11.24	11.26	11.31
08/04/91	19:31:06	11.22	11.24	11.29
08/04/91	20:31:06	11.19	11.24	11.26
08/04/91	21:31:06	11.17	11.22	11.24
08/04/91	22:31:06	11.17	11.22	11.24
08/04/91	23:31:06	11.17	11.19	11.24
08/05/91	00:31:06	11.17	11.19	11.24
08/05/91	01:31:06	11.17	11.19	11.22
08/05/91	02:31:06	11.17	11.19	11.22
08/05/91	03:31:06	11.15	11.19	11.22
08/05/91	04:31:06	11.12	11.17	11.19
08/05/91	05:31:06	11.08	11.12	11.17
08/05/91	06:31:06	11.03	11.08	11.12
08/05/91	07:31:06	10.98	11.03	11.1
08/05/91	08:31:06	10.94	10.98	11.08
08/05/91	09:31:06	10.89	10.96	11.03
08/05/91	10:31:06	10.89	10.96	11.05
08/05/91	11:31:06	10.8	10.96	11.08
08/05/91	12:31:06	10.84	10.98	11.05
08/05/91	13:31:06	10.82	10.96	11.08
08/05/91	14:31:06	10.84	10.96	11.03
08/05/91	15:31:06	10.91	11.01	11.08
08/05/91	16:31:06	10.94	10.98	11.03
08/05/91	17:31:06	10.94	10.96	11.03
08/05/91	18:31:06	10.91	10.94	11.01
08/05/91	19:31:06	10.89	10.94	10.96
08/05/91	20:31:06	10.89	10.91	10.96
08/05/91	21:31:06	10.87	10.89	10.94
08/05/91	22:31:06	10.87	10.87	10.89
08/05/91	23:31:06	10.87	10.87	10.87
08/06/91	00:31:06	10.84	10.84	10.87
08/06/91	01:31:06	10.84	10.84	10.89
08/06/91	02:31:06	10.84	10.87	10.89

08/06/91	03:31:06	10.82	10.84	10.89
08/06/91	04:31:06	10.8	10.82	10.84
08/06/91	05:31:06	10.77	10.8	10.82
08/06/91	06:31:06	10.71	10.75	10.82
08/06/91	07:31:06	10.66	10.71	10.75
08/06/91	08:31:06	10.61	10.66	10.75
08/06/91	09:31:06	10.57	10.64	10.71
08/06/91	10:31:06	10.57	10.61	10.71
08/06/91	11:31:06	10.52	10.61	10.71
08/06/91	12:31:06	10.52	10.61	10.73
08/06/91	13:31:06	10.5	10.61	10.77
08/06/91	14:31:06	10.52	10.61	10.71
08/06/91	15:31:06	10.59	10.66	10.73
08/06/91	16:31:06	10.64	10.66	10.73
08/06/91	17:31:06	10.64	10.66	10.71
08/06/91	18:31:06	10.64	10.66	10.71
08/06/91	19:31:06	10.61	10.64	10.68
08/06/91	20:31:06	10.59	10.61	10.66
08/06/91	21:31:06	10.57	10.59	10.61
08/06/91	22:31:06	10.57	10.59	10.61
08/06/91	23:31:06	10.57	10.59	10.61
08/07/91	00:31:06	10.57	10.59	10.64
08/07/91	01:31:06	10.59	10.61	10.64
08/07/91	02:31:06	10.59	10.61	10.64
08/07/91	03:31:06	10.57	10.61	10.64
08/07/91	04:31:06	10.54	10.59	10.61
08/07/91	05:31:06	10.52	10.57	10.61
08/07/91	06:31:06	10.5	10.52	10.57
08/07/91	07:31:06	10.43	10.47	10.5
08/07/91	08:31:06	10.38	10.43	10.5
08/07/91	09:31:06	10.36	10.4	10.45
08/07/91	10:31:06	10.33	10.38	10.47
08/07/91	11:31:06	10.26	10.38	10.52
08/07/91	12:31:06	10.31	10.4	10.57
08/07/91	13:31:06	10.29	10.43	10.54
08/07/91	14:31:06	10.33	10.5	10.66
08/07/91	15:31:06	10.45	10.52	10.68
08/07/91	16:31:06	10.47	10.52	10.57
08/07/91	17:31:06	10.5	10.54	10.57
08/07/91	18:31:06	10.5	10.52	10.57
08/07/91	19:31:06	10.52	10.54	10.59
08/07/91	20:31:06	10.52	10.52	10.57
08/07/91	21:31:06	10.52	10.54	10.59
08/07/91	22:31:06	10.54	10.57	10.59
08/07/91	23:31:06	10.54	10.57	10.61
08/08/91	00:31:06	10.57	10.59	10.61
08/08/91	01:31:06	10.57	10.61	10.66
08/08/91	02:31:06	10.59	10.64	10.66
08/08/91	03:31:06	10.61	10.64	10.68
08/08/91	04:31:06	10.64	10.66	10.68
08/08/91	05:31:06	10.64	10.66	10.68
08/08/91	06:31:06	10.59	10.61	10.68
08/08/91	07:31:06	10.52	10.59	10.66
08/08/91	08:31:06	10.5	10.57	10.64
08/08/91	09:31:06	10.47	10.54	10.64
08/08/91	10:31:06	10.45	10.52	10.71

08/08/91	11:31:06	10.43	10.52	10.68
08/08/91	12:31:06	10.45	10.54	10.68
08/08/91	13:31:06	10.47	10.57	10.71
08/08/91	14:31:06	10.54	10.59	10.8
08/08/91	15:31:06	10.54	10.61	10.68
08/08/91	16:31:06	10.59	10.66	10.82
08/08/91	17:31:06	10.61	10.64	10.68
08/08/91	18:31:06	10.61	10.64	10.68
08/08/91	19:31:06	10.61	10.64	10.68
08/08/91	20:31:06	10.59	10.64	10.66
08/08/91	21:31:06	10.59	10.61	10.66
08/08/91	22:31:06	10.57	10.61	10.64
08/08/91	23:31:06	10.59	10.61	10.66
08/09/91	00:31:06	10.61	10.64	10.66
08/09/91	01:31:06	10.59	10.64	10.66
08/09/91	02:31:06	10.61	10.64	10.66
08/09/91	03:31:06	10.61	10.64	10.66
08/09/91	04:31:06	10.59	10.64	10.66
08/09/91	05:31:06	10.57	10.59	10.64
08/09/91	06:31:06	10.52	10.57	10.59
08/09/91	07:31:06	10.45	10.52	10.59
08/09/91	08:31:06	10.43	10.47	10.54
08/09/91	09:31:06	10.38	10.43	10.54
08/09/91	10:31:06	10.38	10.43	10.5
08/09/91	11:31:06	10.33	10.43	10.59
08/09/91	12:31:06	10.38	10.45	10.57
08/09/91	13:31:06	10.33	10.47	10.59
08/09/91	14:31:06	10.33	10.45	10.57
08/09/91	15:31:06	10.38	10.47	10.57
08/09/91	16:31:06	10.45	10.52	10.57
08/09/91	17:31:06	10.47	10.52	10.57
08/09/91	18:31:06	10.5	10.52	10.54
08/09/91	19:31:06	10.45	10.5	10.52
08/09/91	20:31:06	10.43	10.47	10.5
08/09/91	21:31:06	10.4	10.43	10.47
08/09/91	22:31:06	10.4	10.43	10.47
08/09/91	23:31:06	10.4	10.45	10.47
08/10/91	00:31:06	10.43	10.45	10.47
08/10/91	01:31:06	10.43	10.45	10.47
08/10/91	02:31:06	10.4	10.43	10.47
08/10/91	03:31:06	10.38	10.43	10.45
08/10/91	04:31:06	10.36	10.38	10.43
08/10/91	05:31:06	10.33	10.38	10.4
08/10/91	06:31:06	10.29	10.33	10.36
08/10/91	07:31:06	10.22	10.29	10.36
08/10/91	08:31:06	10.15	10.26	10.38
08/10/91	09:31:06	10.15	10.24	10.36
08/10/91	10:31:06	10.12	10.19	10.33
08/10/91	11:31:06	10.1	10.22	10.36
08/10/91	12:31:06	10.12	10.22	10.38
08/10/91	13:31:06	10.1	10.22	10.33
08/10/91	14:31:06	10.17	10.31	10.47
08/10/91	15:31:06	10.24	10.29	10.33
08/10/91	16:31:06	10.26	10.26	10.33
08/10/91	17:31:06	10.26	10.31	10.33
08/10/91	18:31:06	10.29	10.31	10.36

08/10/91	19:31:06	10.26	10.31	10.33
08/10/91	20:31:06	10.24	10.29	10.31
08/10/91	21:31:06	10.24	10.26	10.31
08/10/91	22:31:06	10.26	10.29	10.33
08/10/91	23:31:06	10.29	10.31	10.33
08/11/91	00:31:06	10.29	10.31	10.36
08/11/91	01:31:06	10.29	10.33	10.36
08/11/91	02:31:06	10.31	10.31	10.36
08/11/91	03:31:06	10.29	10.31	10.36
08/11/91	04:31:06	10.29	10.31	10.36
08/11/91	05:31:06	10.26	10.29	10.33
08/11/91	06:31:06	10.22	10.26	10.29
08/11/91	07:31:06	10.19	10.24	10.31
08/11/91	08:31:06	10.15	10.19	10.29
08/11/91	09:31:06	10.15	10.19	10.26
08/11/91	10:31:06	10.12	10.19	10.26
08/11/91	11:31:06	10.1	10.22	10.33
08/11/91	12:31:06	10.06	10.24	10.33
08/11/91	13:31:06	10.12	10.29	10.4
08/11/91	14:31:06	10.29	10.33	10.43
08/11/91	15:31:06	10.29	10.33	10.38
08/11/91	16:31:06	10.31	10.33	10.38
08/11/91	17:31:06	10.33	10.36	10.38
08/11/91	18:31:06	10.36	10.36	10.38
08/11/91	19:31:06	10.36	10.38	10.38
08/11/91	20:31:06	10.36	10.38	10.43
08/11/91	21:31:06	10.36	10.4	10.45
08/11/91	22:31:06	10.4	10.43	10.47
08/11/91	23:31:06	10.4	10.45	10.5
08/12/91	00:31:06	10.43	10.47	10.52
08/12/91	01:31:06	10.47	10.5	10.54
08/12/91	02:31:06	10.5	10.54	10.59
08/12/91	03:31:06	10.52	10.54	10.59
08/12/91	04:31:06	10.52	10.57	10.59
08/12/91	05:31:06	10.52	10.54	10.59
08/12/91	06:31:06	10.52	10.52	10.54
08/12/91	07:31:06	10.47	10.52	10.57
08/12/91	08:31:06	10.43	10.5	10.59
08/12/91	09:31:06	10.45	10.5	10.57
08/12/91	10:31:06	10.4	10.5	10.59
08/12/91	11:31:06	10.4	10.52	10.66
08/12/91	12:31:06	10.43	10.52	10.61
08/12/91	13:31:06	10.36	10.54	10.68
08/12/91	14:31:06	10.47	10.61	10.77
08/12/91	15:31:06	10.45	10.57	10.73
08/12/91	16:31:06	10.57	10.61	10.66
08/12/91	17:31:06	10.61	10.64	10.66
08/12/91	18:31:06	10.61	10.64	10.66
08/12/91	19:31:06	10.61	10.61	10.68
08/12/91	20:31:06	10.59	10.61	10.64
08/12/91	21:31:06	10.57	10.61	10.64
08/12/91	22:31:06	10.57	10.61	10.64
08/12/91	23:31:06	10.57	10.61	10.64
08/13/91	00:31:06	10.59	10.61	10.66
08/13/91	01:31:06	10.61	10.64	10.66
08/13/91	02:31:06	10.59	10.64	10.66

08/13/91 03:31:06	10.59	10.64	10.66
08/13/91 04:31:06	10.59	10.61	10.66
08/13/91 05:31:06	10.57	10.61	10.64
08/13/91 06:31:06	10.52	10.57	10.61
08/13/91 07:31:06	10.45	10.52	10.59
08/13/91 08:31:06	10.43	10.5	10.54
08/13/91 09:31:06	10.38	10.45	10.59
08/13/91 10:31:06	10.33	10.45	10.59
08/13/91 11:31:06	10.33	10.45	10.66
08/13/91 12:31:06	10.36	10.47	10.66
08/13/91 13:31:06	10.33	10.54	10.64
08/13/91 14:31:06	10.52	10.57	10.64
08/13/91 15:31:06	10.52	10.57	10.61
08/13/91 16:31:06	10.52	10.54	10.59
08/13/91 17:31:06	10.52	10.57	10.59
08/13/91 18:31:06	10.5	10.54	10.57
08/13/91 19:31:06	10.5	10.52	10.57
08/13/91 20:31:06	10.47	10.52	10.54
08/13/91 21:31:06	10.47	10.5	10.54
08/13/91 22:31:06	10.45	10.5	10.52
08/13/91 23:31:06	10.47	10.5	10.52
08/14/91 00:31:06	10.47	10.5	10.52
08/14/91 01:31:06	10.47	10.5	10.54
08/14/91 02:31:06	10.47	10.5	10.54
08/14/91 03:31:06	10.47	10.5	10.54
08/14/91 04:31:06	10.47	10.5	10.54
08/14/91 05:31:06	10.45	10.5	10.52
08/14/91 06:31:06	10.4	10.45	10.5
08/14/91 07:31:06	10.29	10.38	10.47
08/14/91 08:31:06	10.26	10.33	10.43
08/14/91 09:31:06	10.24	10.36	10.47
08/14/91 10:31:06	10.26	10.4	10.52
08/14/91 11:31:06	10.19	10.33	10.5
08/14/91 12:31:06	10.26	10.4	10.54
08/14/91 13:31:06	10.31	10.4	10.54
08/14/91 14:31:06	10.38	10.4	10.47
08/14/91 15:31:06	10.33	10.38	10.43
08/14/91 16:31:06	10.36	10.38	10.43
08/14/91 17:31:06	10.36	10.36	10.4
08/14/91 18:31:06	10.33	10.36	10.43
08/14/91 19:31:06	10.33	10.38	10.4
08/14/91 20:31:06	10.33	10.38	10.4
08/14/91 21:31:06	10.33	10.36	10.4
08/14/91 22:31:06	10.33	10.36	10.4
08/14/91 23:31:06	10.33	10.36	10.38
08/15/91 00:31:06	10.33	10.36	10.38
08/15/91 01:31:06	10.33	10.36	10.38
08/15/91 02:31:06	10.33	10.36	10.38
08/15/91 03:31:06	10.31	10.36	10.38
08/15/91 04:31:06	10.29	10.33	10.36
08/15/91 05:31:06	10.26	10.31	10.33
08/15/91 06:31:06	10.24	10.26	10.31
08/15/91 07:31:06	10.15	10.24	10.29
08/15/91 08:31:06	10.12	10.22	10.29
08/15/91 09:31:06	10.12	10.19	10.29
08/15/91 10:31:06	10.17	10.22	10.29

08/15/91	11:31:06	10.12	10.19	10.22
08/15/91	12:31:06	10.17	10.22	10.29
08/15/91	13:31:06	10.17	10.22	10.24
08/15/91	14:31:06	10.12	10.22	10.29
08/15/91	15:31:06	10.12	10.22	10.26
08/15/91	16:31:06	10.15	10.22	10.24
08/15/91	17:31:06	10.19	10.22	10.26
08/15/91	18:31:06	10.19	10.22	10.26
08/15/91	19:31:06	10.17	10.22	10.24
08/15/91	20:31:06	10.12	10.19	10.24
08/15/91	21:31:06	10.17	10.19	10.22
08/15/91	22:31:06	10.17	10.19	10.22
08/15/91	23:31:06	10.17	10.17	10.19
08/16/91	00:31:06	10.17	10.19	10.22
08/16/91	01:31:06	10.17	10.19	10.22
08/16/91	02:31:06	10.17	10.19	10.22
08/16/91	03:31:06	10.15	10.17	10.17
08/16/91	04:31:06	10.15	10.15	10.17
08/16/91	05:31:06	10.12	10.15	10.15
08/16/91	06:31:06	10.06	10.1	10.15
08/16/91	07:31:06	10.01	10.08	10.12
08/16/91	08:31:06	9.96	10.03	10.1
08/16/91	09:31:06	9.94	10.01	10.1
08/16/91	10:31:06	9.89	10.03	10.15
08/16/91	11:31:06	9.96	10.03	10.1
08/16/91	12:31:06	9.96	10.03	10.17
08/16/91	13:31:06	9.96	10.06	10.22
08/16/91	14:31:06	9.94	10.08	10.26
08/16/91	15:31:06	9.99	10.06	10.15
08/16/91	16:31:06	10.06	10.08	10.12
08/16/91	17:31:06	10.06	10.1	10.15
08/16/91	18:31:06	10.08	10.08	10.12
08/16/91	19:31:06	10.06	10.08	10.12
08/16/91	20:31:06	10.06	10.08	10.1
08/16/91	21:31:06	10.06	10.06	10.08
08/16/91	22:31:06	10.06	10.06	10.08
08/16/91	23:31:06	10.06	10.08	10.08
08/17/91	00:31:06	10.06	10.08	10.08
08/17/91	01:31:06	10.06	10.08	10.1
08/17/91	02:31:06	10.08	10.08	10.12
08/17/91	03:31:06	10.06	10.08	10.1
08/17/91	04:31:06	10.06	10.08	10.1
08/17/91	05:31:06	10.03	10.06	10.08
08/17/91	06:31:06	9.99	10.03	10.08
08/17/91	07:31:06	9.94	9.99	10.03
08/17/91	08:31:06	9.92	9.94	10.01
08/17/91	09:31:06	9.92	9.96	10.03
08/17/91	10:31:06	9.89	9.96	10.06
08/17/91	11:31:06	9.85	9.94	10.08
08/17/91	12:31:06	9.85	9.94	10.03
08/17/91	13:31:06	9.87	9.99	10.1
08/17/91	14:31:06	9.89	10.01	10.17
08/17/91	15:31:06	9.89	10.01	10.06
08/17/91	16:31:06	9.94	10.01	10.06
08/17/91	17:31:06	9.99	10.03	10.08
08/17/91	18:31:06	10.01	10.03	10.06

08/17/91	19:31:06	10.01	10.03	10.06
08/17/91	20:31:06	9.99	10.01	10.06
08/17/91	21:31:06	9.99	9.99	10.01
08/17/91	22:31:06	9.99	9.99	10.01
08/17/91	23:31:06	9.99	10.01	10.01
08/18/91	00:31:06	10.01	10.01	10.03
08/18/91	01:31:06	10.01	10.03	10.03
08/18/91	02:31:06	10.01	10.03	10.03
08/18/91	03:31:06	10.01	10.06	10.06
08/18/91	04:31:06	9.99	10.01	10.06
08/18/91	05:31:06	9.96	9.99	10.03
08/18/91	06:31:06	9.87	9.92	9.96
08/18/91	07:31:06	9.8	9.87	9.92
08/18/91	08:31:06	9.78	9.85	9.92
08/18/91	09:31:06	9.78	9.87	9.96
08/18/91	10:31:06	9.78	9.87	9.99
08/18/91	11:31:06	9.78	9.87	10.01
08/18/91	12:31:06	9.78	9.85	9.96
08/18/91	13:31:06	9.78	9.87	9.96
08/18/91	14:31:06	9.8	9.89	10.06
08/18/91	15:31:06	9.8	9.92	10.03
08/18/91	16:31:06	9.85	9.92	9.99
08/18/91	17:31:06	9.92	9.94	9.99
08/18/91	18:31:06	9.89	9.94	9.99
08/18/91	19:31:06	9.87	9.89	9.94
08/18/91	20:31:06	9.85	9.89	9.92
08/18/91	21:31:06	9.85	9.87	9.89
08/18/91	22:31:06	9.82	9.87	9.89
08/18/91	23:31:06	9.82	9.87	9.89
08/19/91	00:31:06	9.82	9.87	9.89
08/19/91	01:31:06	9.82	9.85	9.89
08/19/91	02:31:06	9.82	9.82	9.85
08/19/91	03:31:06	9.82	9.82	9.85
08/19/91	04:31:06	9.8	9.82	9.85
08/19/91	05:31:06	9.78	9.8	9.82
08/19/91	06:31:06	9.66	9.73	9.78
08/19/91	07:31:06	9.64	9.68	9.75
08/19/91	08:31:06	9.59	9.66	9.73
08/19/91	09:31:06	9.61	9.68	9.75
08/19/91	10:31:06	9.57	9.66	9.78
08/19/91	11:31:06	9.61	9.71	9.85
08/19/91	12:31:06	9.61	9.71	9.85
08/19/91	13:31:06	9.66	9.75	9.92
08/19/91	14:31:06	9.61	9.73	9.87
08/19/91	15:31:06	9.66	9.78	9.87
08/19/91	16:31:06	9.68	9.78	9.85
08/19/91	17:31:06	9.73	9.75	9.8
08/19/91	18:31:06	9.68	9.73	9.8
08/19/91	19:31:06	9.68	9.68	9.71
08/19/91	20:31:06	9.66	9.68	9.73
08/19/91	21:31:06	9.66	9.71	9.73
08/19/91	22:31:06	9.66	9.68	9.73
08/19/91	23:31:06	9.66	9.68	9.68
08/20/91	00:31:06	9.66	9.68	9.68
08/20/91	01:31:06	9.66	9.68	9.71
08/20/91	02:31:06	9.66	9.68	9.71

08/20/91	03:31:06	9.68	9.68	9.71
08/20/91	04:31:06	9.68	9.68	9.71
08/20/91	05:31:06	9.68	9.68	9.71
08/20/91	06:31:06	9.64	9.68	9.71
08/20/91	07:31:06	9.47	9.64	9.75
08/20/91	08:31:06	9.47	9.59	9.73
08/20/91	09:31:06	9.54	9.61	9.71
08/20/91	10:31:06	9.54	9.61	9.78
08/20/91	11:31:06	9.52	9.61	9.78
08/20/91	12:31:06	9.52	9.68	9.89
08/20/91	13:31:06	9.47	9.66	9.82
08/20/91	14:31:06	9.54	9.66	9.78
08/20/91	15:31:06	9.61	9.68	9.78
08/20/91	16:31:06	9.66	9.73	9.8
08/20/91	17:31:06	9.68	9.71	9.75
08/20/91	18:31:06	9.68	9.71	9.75
08/20/91	19:31:06	9.66	9.68	9.73
08/20/91	20:31:06	9.64	9.68	9.68
08/20/91	21:31:06	9.61	9.64	9.68
08/20/91	22:31:06	9.61	9.64	9.64
08/20/91	23:31:06	9.61	9.61	9.64
08/21/91	00:31:06	9.61	9.64	9.64
08/21/91	01:31:06	9.61	9.64	9.64
08/21/91	02:31:06	9.61	9.64	9.66
08/21/91	03:31:06	9.61	9.64	9.66
08/21/91	04:31:06	9.59	9.61	9.64
08/21/91	05:31:06	9.54	9.59	9.61
08/21/91	06:31:06	9.43	9.5	9.59
08/21/91	07:31:06	9.4	9.45	9.5
08/21/91	08:31:06	9.38	9.45	9.57

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rf1

WMW2-2	Time	Min	Mean	Max
08/21/91	12:06:46	9.4	9.52	9.61
08/21/91	13:06:46	9.45	9.52	9.61
08/21/91	14:06:46	9.47	9.54	9.66
08/21/91	15:06:46	9.5	9.57	9.64
08/21/91	16:06:46	9.52	9.59	9.68
08/21/91	17:06:46	9.57	9.61	9.66
08/21/91	18:06:46	9.57	9.59	9.64
08/21/91	19:06:46	9.57	9.59	9.64
08/21/91	20:06:46	9.54	9.57	9.59
08/21/91	21:06:46	9.54	9.59	9.59
08/21/91	22:06:46	9.54	9.57	9.59
08/21/91	23:06:46	9.54	9.57	9.57
08/22/91	00:06:46	9.57	9.57	9.59
08/22/91	01:06:46	9.54	9.59	9.61
08/22/91	02:06:46	9.57	9.59	9.61
08/22/91	03:06:46	9.57	9.57	9.59
08/22/91	04:06:46	9.57	9.57	9.59
08/22/91	05:06:46	9.57	9.57	9.59
08/22/91	06:06:46	9.5	9.54	9.59
08/22/91	07:06:46	9.43	9.5	9.54
08/22/91	08:06:46	9.36	9.4	9.52
08/22/91	09:06:46	9.34	9.43	9.57
08/22/91	10:06:46	9.4	9.5	9.57
08/22/91	11:06:46	9.36	9.45	9.59
08/22/91	12:06:46	9.31	9.43	9.61
08/22/91	13:06:46	9.34	9.52	9.64
08/22/91	14:06:46	9.34	9.52	9.64
08/22/91	15:06:46	9.47	9.54	9.66
08/22/91	16:06:46	9.5	9.52	9.57
08/22/91	17:06:46	9.5	9.54	9.57
08/22/91	18:06:46	9.5	9.52	9.57
08/22/91	19:06:46	9.5	9.52	9.57
08/22/91	20:06:46	9.47	9.5	9.54
08/22/91	21:06:46	9.47	9.5	9.52
08/22/91	22:06:46	9.47	9.5	9.54
08/22/91	23:06:46	9.47	9.5	9.52
08/23/91	00:06:46	9.47	9.52	9.52
08/23/91	01:06:46	9.47	9.52	9.52
08/23/91	02:06:46	9.47	9.5	9.54
08/23/91	03:06:46	9.47	9.5	9.52
08/23/91	04:06:46	9.47	9.47	9.5
08/23/91	05:06:46	9.45	9.47	9.5
08/23/91	06:06:46	9.36	9.43	9.47
08/23/91	07:06:46	9.31	9.36	9.43
08/23/91	08:06:46	9.29	9.36	9.43
08/23/91	09:06:46	9.29	9.34	9.4
08/23/91	10:06:46	9.24	9.36	9.5
08/23/91	11:06:46	9.22	9.36	9.5
08/23/91	12:06:46	9.22	9.4	9.54
08/23/91	13:06:46	9.24	9.36	9.54
08/23/91	14:06:46	9.38	9.43	9.57
08/23/91	15:06:46	9.34	9.4	9.47
08/23/91	16:06:46	9.31	9.4	9.5
08/23/91	17:06:46	9.38	9.4	9.45

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08/23/91 18:06:46	9.4	9.43	9.45
08/23/91 19:06:46	9.36	9.38	9.43
08/23/91 20:06:46	9.34	9.36	9.38
08/23/91 21:06:46	9.34	9.34	9.36
08/23/91 22:06:46	9.31	9.34	9.36
08/23/91 23:06:46	9.34	9.36	9.38
08/24/91 00:06:46	9.34	9.36	9.4
08/24/91 01:06:46	9.34	9.38	9.4
08/24/91 02:06:46	9.34	9.38	9.4
08/24/91 03:06:46	9.36	9.36	9.4
08/24/91 04:06:46	9.36	9.36	9.38
08/24/91 05:06:46	9.34	9.36	9.36
08/24/91 06:06:46	9.29	9.34	9.36
08/24/91 07:06:46	9.27	9.29	9.34
08/24/91 08:06:46	9.22	9.27	9.34
08/24/91 09:06:46	9.06	9.27	9.43
08/24/91 10:06:46	9.2	9.29	9.36
08/24/91 11:06:46	9.2	9.29	9.36
08/24/91 12:06:46	9.22	9.29	9.43
08/24/91 13:06:46	9.24	9.29	9.38
08/24/91 14:06:46	9.22	9.31	9.4
08/24/91 15:06:46	9.31	9.34	9.36
08/24/91 16:06:46	9.31	9.34	9.38
08/24/91 17:06:46	9.31	9.34	9.38
08/24/91 18:06:46	9.31	9.34	9.38
08/24/91 19:06:46	9.31	9.31	9.36
08/24/91 20:06:46	9.29	9.31	9.31
08/24/91 21:06:46	9.29	9.29	9.31
08/24/91 22:06:46	9.29	9.31	9.34
08/24/91 23:06:46	9.29	9.31	9.34
08/25/91 00:06:46	9.31	9.31	9.34
08/25/91 01:06:46	9.31	9.34	9.36
08/25/91 02:06:46	9.34	9.38	9.38
08/25/91 03:06:46	9.34	9.38	9.38
08/25/91 04:06:46	9.31	9.34	9.38
08/25/91 05:06:46	9.31	9.36	9.38
08/25/91 06:06:46	9.31	9.34	9.36
08/25/91 07:06:46	9.24	9.29	9.34
08/25/91 08:06:46	9.22	9.27	9.31
08/25/91 09:06:46	9.03	9.2	9.29
08/25/91 10:06:46	9.1	9.17	9.31
08/25/91 11:06:46	9.1	9.22	9.36
08/25/91 12:06:46	9.08	9.22	9.45
08/25/91 13:06:46	9.1	9.24	9.43
08/25/91 14:06:46	9.1	9.27	9.43
08/25/91 15:06:46	9.15	9.29	9.43
08/25/91 16:06:46	9.27	9.34	9.45
08/25/91 17:06:46	9.29	9.31	9.36
08/25/91 18:06:46	9.29	9.31	9.36
08/25/91 19:06:46	9.27	9.29	9.31
08/25/91 20:06:46	9.24	9.27	9.31
08/25/91 21:06:46	9.22	9.24	9.29
08/25/91 22:06:46	9.24	9.27	9.29
08/25/91 23:06:46	9.24	9.27	9.29
08/26/91 00:06:46	9.24	9.27	9.31
08/26/91 01:06:46	9.27	9.29	9.31

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08/26/91	02:06:46	9.29	9.31	9.36
08/26/91	03:06:46	9.31	9.31	9.34
08/26/91	04:06:46	9.31	9.34	9.36
08/26/91	05:06:46	9.34	9.36	9.36
08/26/91	06:06:46	9.34	9.36	9.4
08/26/91	07:06:46	9.36	9.38	9.43
08/26/91	08:06:46	9.36	9.4	9.43
08/26/91	09:06:46	9.34	9.38	9.43
08/26/91	10:06:46	9.36	9.43	9.47
08/26/91	11:06:46	9.4	9.5	9.59
08/26/91	12:06:46	9.5	9.52	9.61
08/26/91	13:06:46	9.5	9.52	9.59
08/26/91	14:06:46	9.52	9.57	9.64
08/26/91	15:06:46	9.54	9.64	9.68
08/26/91	16:06:46	9.64	9.66	9.71
08/26/91	17:06:46	9.66	9.68	9.71
08/26/91	18:06:46	9.68	9.73	9.78
08/26/91	19:06:46	9.73	9.73	9.78
08/26/91	20:06:46	9.73	9.75	9.78
08/26/91	21:06:46	9.73	9.78	9.8
08/26/91	22:06:46	9.75	9.78	9.82
08/26/91	23:06:46	9.78	9.8	9.8
08/27/91	00:06:46	9.78	9.8	9.82
08/27/91	01:06:46	9.82	9.85	9.89
08/27/91	02:06:46	9.82	9.87	9.92
08/27/91	03:06:46	9.85	9.92	9.92
08/27/91	04:06:46	9.87	9.87	9.92
08/27/91	05:06:46	9.87	9.92	9.94
08/27/91	06:06:46	9.87	9.87	9.94
08/27/91	07:06:46	9.87	9.87	9.89
08/27/91	08:06:46	9.85	9.87	9.92
08/27/91	09:06:46	9.85	9.89	9.94
08/27/91	10:06:46	9.8	9.87	9.94
08/27/91	11:06:46	9.75	9.85	9.92
08/27/91	12:06:46	9.71	9.94	10.1
08/27/91	13:06:46	9.75	9.96	10.03
08/27/91	14:06:46	9.8	9.92	10.06
08/27/91	15:06:46	9.85	9.96	10.06
08/27/91	16:06:46	9.85	10.01	10.1
08/27/91	17:06:46	10.01	10.03	10.08
08/27/91	18:06:46	10.01	10.03	10.08
08/27/91	19:06:46	10.01	10.01	10.03
08/27/91	20:06:46	10.01	10.03	10.06
08/27/91	21:06:46	9.99	10.03	10.06
08/27/91	22:06:46	9.99	10.01	10.06
08/27/91	23:06:46	10.01	10.01	10.06
08/28/91	00:06:46	10.01	10.01	10.06
08/28/91	01:06:46	10.01	10.03	10.03
08/28/91	02:06:46	10.01	10.03	10.03
08/28/91	03:06:46	10.03	10.03	10.06
08/28/91	04:06:46	10.01	10.03	10.06
08/28/91	05:06:46	10.01	10.03	10.03
08/28/91	06:06:46	9.92	9.99	10.03
08/28/91	07:06:46	9.87	9.92	10.03
08/28/91	08:06:46	9.92	9.96	10.03
08/28/91	09:06:46	9.68	9.89	10.03

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08/28/91	10:06:46	9.78	9.94	10.08
08/28/91	11:06:46	9.73	9.92	10.1
08/28/91	12:06:46	9.78	9.96	10.36
08/28/91	13:06:46	9.96	10.1	10.36
08/28/91	14:06:46	9.87	9.99	10.08
08/28/91	15:06:46	9.87	9.99	10.1
08/28/91	16:06:46	9.94	10.03	10.12
08/28/91	17:06:46	10.01	10.06	10.12
08/28/91	18:06:46	10.01	10.06	10.12
08/28/91	19:06:46	10.01	10.03	10.08
08/28/91	20:06:46	10.01	10.01	10.03
08/28/91	21:06:46	9.99	10.01	10.03
08/28/91	22:06:46	9.99	10.01	10.01
08/28/91	23:06:46	9.99	10.01	10.01
08/29/91	00:06:46	10.01	10.01	10.03
08/29/91	01:06:46	10.01	10.03	10.03
08/29/91	02:06:46	10.01	10.03	10.03
08/29/91	03:06:46	10.01	10.03	10.06
08/29/91	04:06:46	10.01	10.03	10.06
08/29/91	05:06:46	10.01	10.01	10.03
08/29/91	06:06:46	9.96	10.01	10.03
08/29/91	07:06:46	9.82	9.92	10.03
08/29/91	08:06:46	9.82	9.94	10.03
08/29/91	09:06:46	9.64	9.89	10.06
08/29/91	10:06:46	9.68	9.96	10.19
08/29/91	11:06:46	9.8	10.03	10.22
08/29/91	12:06:46	9.82	9.94	10.08
08/29/91	13:06:46	9.82	10.01	10.12
08/29/91	14:06:46	9.87	9.99	10.15
08/29/91	15:06:46	9.94	10.03	10.15
08/29/91	16:06:46	9.96	10.12	10.22
08/29/91	17:06:46	10.12	10.15	10.19
08/29/91	18:06:46	10.12	10.15	10.19
08/29/91	19:06:46	10.12	10.15	10.19
08/29/91	20:06:46	10.12	10.15	10.19
08/29/91	21:06:46	10.12	10.15	10.15
08/29/91	22:06:46	10.12	10.15	10.15
08/29/91	23:06:46	10.15	10.15	10.17
08/30/91	00:06:46	10.15	10.17	10.19
08/30/91	01:06:46	10.17	10.19	10.22
08/30/91	02:06:46	10.19	10.22	10.24
08/30/91	03:06:46	10.22	10.24	10.24
08/30/91	04:06:46	10.22	10.24	10.26
08/30/91	05:06:46	10.22	10.24	10.26
08/30/91	06:06:46	10.12	10.22	10.26
08/30/91	07:06:46	10.08	10.12	10.17
08/30/91	08:06:46	10.01	10.12	10.33
08/30/91	09:06:46	9.96	10.19	10.33
08/30/91	10:06:46	9.99	10.19	10.26
08/30/91	11:06:46	9.96	10.12	10.33
08/30/91	12:06:46	10.1	10.19	10.26
08/30/91	13:06:46	10.1	10.29	10.52
08/30/91	14:06:46	10.03	10.24	10.36
08/30/91	15:06:46	10.26	10.29	10.33
08/30/91	16:06:46	10.19	10.26	10.31
08/30/91	17:06:46	10.26	10.29	10.33

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08/30/91 18:06:46	10.26	10.29	10.33
08/30/91 19:06:46	10.24	10.26	10.31
08/30/91 20:06:46	10.24	10.24	10.29
08/30/91 21:06:46	10.22	10.26	10.29
08/30/91 22:06:46	10.22	10.24	10.29
08/30/91 23:06:46	10.22	10.26	10.29
08/31/91 00:06:46	10.22	10.26	10.29
08/31/91 01:06:46	10.22	10.24	10.24
08/31/91 02:06:46	10.24	10.24	10.26
08/31/91 03:06:46	10.24	10.24	10.24
08/31/91 04:06:46	10.22	10.24	10.26
08/31/91 05:06:46	10.22	10.24	10.26
08/31/91 06:06:46	10.06	10.19	10.24
08/31/91 07:06:46	10.03	10.06	10.12
08/31/91 08:06:46	10.01	10.06	10.17
08/31/91 09:06:46	9.96	10.06	10.15
08/31/91 10:06:46	9.89	10.1	10.33
08/31/91 11:06:46	9.89	10.06	10.29
08/31/91 12:06:46	9.92	10.06	10.31
08/31/91 13:06:46	9.96	10.17	10.33
08/31/91 14:06:46	9.92	10.08	10.24
08/31/91 15:06:46	9.96	10.19	10.29
08/31/91 16:06:46	10.01	10.15	10.24
08/31/91 17:06:46	10.15	10.17	10.24
08/31/91 18:06:46	10.15	10.17	10.22
08/31/91 19:06:46	10.1	10.15	10.19
08/31/91 20:06:46	10.08	10.12	10.15
08/31/91 21:06:46	10.08	10.1	10.12
08/31/91 22:06:46	10.06	10.1	10.12
08/31/91 23:06:46	10.08	10.1	10.12
09/01/91 00:06:46	10.08	10.1	10.12
09/01/91 01:06:46	10.08	10.1	10.15
09/01/91 02:06:46	10.08	10.1	10.12
09/01/91 03:06:46	10.06	10.08	10.12
09/01/91 04:06:46	10.06	10.08	10.08
09/01/91 05:06:46	10.01	10.06	10.06
09/01/91 06:06:46	9.89	10.01	10.06
09/01/91 07:06:46	9.87	9.89	9.96
09/01/91 08:06:46	9.82	9.89	9.96
09/01/91 09:06:46	9.82	9.87	9.96
09/01/91 10:06:46	9.8	9.87	9.96
09/01/91 11:06:46	9.75	9.89	10.12
09/01/91 12:06:46	9.78	9.99	10.17
09/01/91 13:06:46	9.71	9.94	10.1
09/01/91 14:06:46	9.8	9.94	10.1
09/01/91 15:06:46	9.8	9.94	10.08
09/01/91 16:06:46	9.85	9.96	10.08
09/01/91 17:06:46	9.99	10.03	10.06
09/01/91 18:06:46	9.94	9.99	10.03
09/01/91 19:06:46	9.92	9.94	9.99
09/01/91 20:06:46	9.92	9.94	9.96
09/01/91 21:06:46	9.89	9.94	9.96
09/01/91 22:06:46	9.87	9.92	9.94
09/01/91 23:06:46	9.85	9.87	9.94
09/02/91 00:06:46	9.87	9.89	9.89
09/02/91 01:06:46	9.85	9.87	9.89

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09/02/91 02:06:46	9.85	9.87	9.87
09/02/91 03:06:46	9.85	9.85	9.89
09/02/91 04:06:46	9.85	9.89	9.89
09/02/91 05:06:46	9.85	9.87	9.87
09/02/91 06:06:46	9.8	9.82	9.87
09/02/91 07:06:46	9.8	9.85	9.85
09/02/91 08:06:46	9.78	9.8	9.85
09/02/91 09:06:46	9.73	9.78	9.85
09/02/91 10:06:46	9.57	9.71	9.82
09/02/91 11:06:46	9.59	9.75	9.89
09/02/91 12:06:46	9.61	9.8	9.89
09/02/91 13:06:46	9.71	9.8	9.87
09/02/91 14:06:46	9.64	9.75	9.82
09/02/91 15:06:46	9.68	9.8	9.89
09/02/91 16:06:46	9.73	9.8	9.89
09/02/91 17:06:46	9.78	9.82	9.87
09/02/91 18:06:46	9.78	9.82	9.87
09/02/91 19:06:46	9.78	9.82	9.85
09/02/91 20:06:46	9.78	9.8	9.85
09/02/91 21:06:46	9.75	9.78	9.82
09/02/91 22:06:46	9.75	9.75	9.8
09/02/91 23:06:46	9.75	9.78	9.78
09/03/91 00:06:46	9.75	9.8	9.82
09/03/91 01:06:46	9.78	9.8	9.82
09/03/91 02:06:46	9.78	9.8	9.82
09/03/91 03:06:46	9.78	9.8	9.82
09/03/91 04:06:46	9.78	9.8	9.85
09/03/91 05:06:46	9.78	9.8	9.85
09/03/91 06:06:46	9.66	9.78	9.82
09/03/91 07:06:46	9.61	9.68	9.8
09/03/91 08:06:46	9.61	9.68	9.75
09/03/91 09:06:46	9.57	9.68	9.78
09/03/91 10:06:46	9.52	9.68	9.8
09/03/91 11:06:46	9.54	9.68	9.87
09/03/91 12:06:46	9.5	9.71	9.89
09/03/91 13:06:46	9.52	9.71	9.87
09/03/91 14:06:46	9.57	9.73	9.89
09/03/91 15:06:46	9.59	9.78	10.03
09/03/91 16:06:46	9.64	9.73	9.82
09/03/91 17:06:46	9.75	9.78	9.85
09/03/91 18:06:46	9.78	9.78	9.82
09/03/91 19:06:46	9.75	9.78	9.82
09/03/91 20:06:46	9.73	9.75	9.8
09/03/91 21:06:46	9.71	9.75	9.78
09/03/91 22:06:46	9.71	9.73	9.75
09/03/91 23:06:46	9.71	9.73	9.75
09/04/91 00:06:46	9.71	9.73	9.78
09/04/91 01:06:46	9.71	9.73	9.75
09/04/91 02:06:46	9.73	9.75	9.75
09/04/91 03:06:46	9.75	9.75	9.78
09/04/91 04:06:46	9.73	9.78	9.8
09/04/91 05:06:46	9.73	9.75	9.8
09/04/91 06:06:46	9.57	9.71	9.78
09/04/91 07:06:46	9.54	9.66	9.78
09/04/91 08:06:46	9.52	9.59	9.66
09/04/91 09:06:46	9.52	9.64	9.82

09/04/91 10:06:46	9.5	9.66	9.78
09/04/91 11:06:46	9.52	9.64	9.8
09/04/91 12:06:46	9.45	9.66	9.85
09/04/91 13:06:46	9.52	9.68	9.87
09/04/91 14:06:46	9.5	9.66	9.87
09/04/91 15:06:46	9.59	9.71	9.85
09/04/91 16:06:46	9.59	9.68	9.82
09/04/91 17:06:46	9.68	9.71	9.75
09/04/91 18:06:46	8.71	9.73	10.12
09/04/91 19:06:46	9.43	9.75	9.87
09/04/91 20:06:46	9.64	9.68	9.73
09/04/91 21:06:46	9.64	9.64	9.66
09/04/91 22:06:46	9.61	9.66	9.68
09/04/91 23:06:46	9.61	9.64	9.68
09/05/91 00:06:46	9.61	9.64	9.64
09/05/91 01:06:46	9.64	9.64	9.66
09/05/91 02:06:46	9.64	9.64	9.66
09/05/91 03:06:46	9.64	9.64	9.66
09/05/91 04:06:46	9.61	9.64	9.66
09/05/91 05:06:46	9.59	9.61	9.64
09/05/91 06:06:46	9.54	9.59	9.64
09/05/91 07:06:46	9.4	9.52	9.59
09/05/91 08:06:46	9.38	9.45	9.54
09/05/91 09:06:46	9.38	9.45	9.54
09/05/91 10:06:46	9.34	9.45	9.66
09/05/91 11:06:46	9.29	9.45	9.66
09/05/91 12:06:46	9.36	9.5	9.71
09/05/91 13:06:46	9.36	9.5	9.66
09/05/91 14:06:46	9.38	9.45	9.57
09/05/91 15:06:46	9.4	9.54	9.64
09/05/91 16:06:46	9.4	9.54	9.68
09/05/91 17:06:46	9.52	9.57	9.61
09/05/91 18:06:46	9.52	9.54	9.57
09/05/91 19:06:46	9.47	9.52	9.57
09/05/91 20:06:46	9.45	9.5	9.54
09/05/91 21:06:46	9.45	9.47	9.5
09/05/91 22:06:46	9.45	9.47	9.5
09/05/91 23:06:46	9.45	9.47	9.5
09/06/91 00:06:46	9.45	9.47	9.5
09/06/91 01:06:46	9.45	9.47	9.5
09/06/91 02:06:46	9.45	9.47	9.47
09/06/91 03:06:46	9.45	9.47	9.47
09/06/91 04:06:46	9.43	9.45	9.47
09/06/91 05:06:46	9.4	9.45	9.45
09/06/91 06:06:46	9.36	9.4	9.45
09/06/91 07:06:46	9.22	9.34	9.38
09/06/91 08:06:46	9.2	9.27	9.36
09/06/91 09:06:46	9.22	9.29	9.36
09/06/91 10:06:46	9.22	9.29	9.36
09/06/91 11:06:46	9.22	9.31	9.47
09/06/91 12:06:46	9.22	9.34	9.47
09/06/91 13:06:46	9.2	9.34	9.54
09/06/91 14:06:46	9.2	9.36	9.45
09/06/91 15:06:46	9.29	9.4	9.52
09/06/91 16:06:46	9.29	9.38	9.47
09/06/91 17:06:46	9.38	9.43	9.5

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09/06/91 18:06:46	9.38	9.4	9.45
09/06/91 19:06:46	9.36	9.38	9.43
09/06/91 20:06:46	9.34	9.38	9.43
09/06/91 21:06:46	9.34	9.36	9.38
09/06/91 22:06:46	9.34	9.36	9.38
09/06/91 23:06:46	9.34	9.36	9.38
09/07/91 00:06:46	9.34	9.36	9.38
09/07/91 01:06:46	9.34	9.38	9.4
09/07/91 02:06:46	9.36	9.38	9.4
09/07/91 03:06:46	9.34	9.38	9.4
09/07/91 04:06:46	9.34	9.36	9.4
09/07/91 05:06:46	9.34	9.36	9.36
09/07/91 06:06:46	9.22	9.31	9.36
09/07/91 07:06:46	9.15	9.2	9.24
09/07/91 08:06:46	9.15	9.2	9.27
09/07/91 09:06:46	9.15	9.2	9.27
09/07/91 10:06:46	9.2	9.24	9.36
09/07/91 11:06:46	9.13	9.27	9.47
09/07/91 12:06:46	9.13	9.24	9.36
09/07/91 13:06:46	9.2	9.27	9.31
09/07/91 14:06:46	9.15	9.29	9.43
09/07/91 15:06:46	9.22	9.29	9.43
09/07/91 16:06:46	9.24	9.38	9.52
09/07/91 17:06:46	9.29	9.34	9.43
09/07/91 18:06:46	9.27	9.31	9.36
09/07/91 19:06:46	9.27	9.29	9.31
09/07/91 20:06:46	9.24	9.27	9.31
09/07/91 21:06:46	9.24	9.29	9.31
09/07/91 22:06:46	9.22	9.27	9.29
09/07/91 23:06:46	9.24	9.27	9.29
09/08/91 00:06:46	9.24	9.27	9.31
09/08/91 01:06:46	9.27	9.29	9.31
09/08/91 02:06:46	9.24	9.27	9.31
09/08/91 03:06:46	9.24	9.29	9.31
09/08/91 04:06:46	9.22	9.27	9.31
09/08/91 05:06:46	9.22	9.24	9.29
09/08/91 06:06:46	9.2	9.22	9.24
09/08/91 07:06:46	9.13	9.17	9.22
09/08/91 08:06:46	9.06	9.13	9.17
09/08/91 09:06:46	9.08	9.15	9.24
09/08/91 10:06:46	9.03	9.15	9.29
09/08/91 11:06:46	9.06	9.15	9.31
09/08/91 12:06:46	9.06	9.17	9.34
09/08/91 13:06:46	9.06	9.17	9.31
09/08/91 14:06:46	9.1	9.22	9.38
09/08/91 15:06:46	9.08	9.2	9.31
09/08/91 16:06:46	9.17	9.2	9.24
09/08/91 17:06:46	9.2	9.22	9.27
09/08/91 18:06:46	9.2	9.22	9.24
09/08/91 19:06:46	9.17	9.2	9.24
09/08/91 20:06:46	9.17	9.2	9.22
09/08/91 21:06:46	9.15	9.17	9.22
09/08/91 22:06:46	9.15	9.17	9.2
09/08/91 23:06:46	9.15	9.17	9.17
09/09/91 00:06:46	9.15	9.17	9.2
09/09/91 01:06:46	9.17	9.17	9.22

09/09/91 02:06:46	9.17	9.17	9.2
09/09/91 03:06:46	9.17	9.2	9.22
09/09/91 04:06:46	9.2	9.22	9.22
09/09/91 05:06:46	9.17	9.22	9.22
09/09/91 06:06:46	9.06	9.17	9.2
09/09/91 07:06:46	9.03	9.08	9.2
09/09/91 08:06:46	8.96	9.06	9.2
09/09/91 09:06:46	8.94	9.03	9.1
09/09/91 10:06:46	8.87	9.06	9.2
09/09/91 11:06:46	8.92	9.08	9.22
09/09/91 12:06:46	8.92	9.1	9.24
09/09/91 13:06:46	9.01	9.1	9.22
09/09/91 14:06:46	9.08	9.15	9.22
09/09/91 15:06:46	8.94	9.13	9.24
09/09/91 16:06:46	9.08	9.13	9.22
09/09/91 17:06:46	9.13	9.15	9.2
09/09/91 18:06:46	9.13	9.15	9.2
09/09/91 19:06:46	9.1	9.15	9.17
09/09/91 20:06:46	9.08	9.13	9.15
09/09/91 21:06:46	9.08	9.1	9.13
09/09/91 22:06:46	9.08	9.1	9.13
09/09/91 23:06:46	9.08	9.1	9.13
09/10/91 00:06:46	9.08	9.1	9.13
09/10/91 01:06:46	9.1	9.13	9.13
09/10/91 02:06:46	9.13	9.13	9.17
09/10/91 03:06:46	9.13	9.15	9.17
09/10/91 04:06:46	9.1	9.15	9.17
09/10/91 05:06:46	9.08	9.13	9.15
09/10/91 06:06:46	9.06	9.08	9.13
09/10/91 07:06:46	8.87	9.03	9.08
09/10/91 08:06:46	8.89	8.99	9.08
09/10/91 09:06:46	8.82	8.99	9.08
09/10/91 10:06:46	8.94	9.03	9.1
09/10/91 11:06:46	8.87	9.01	9.1
09/10/91 12:06:46	8.85	9.06	9.17
09/10/91 13:06:46	8.92	9.01	9.1
09/10/91 14:06:46	8.94	9.1	9.22
09/10/91 15:06:46	9.01	9.1	9.2
09/10/91 16:06:46	9.01	9.1	9.22
09/10/91 17:06:46	9.08	9.13	9.17
09/10/91 18:06:46	9.08	9.1	9.15
09/10/91 19:06:46	9.08	9.08	9.13
09/10/91 20:06:46	9.06	9.08	9.1
09/10/91 21:06:46	9.06	9.1	9.13
09/10/91 22:06:46	9.06	9.08	9.1
09/10/91 23:06:46	9.06	9.08	9.1
09/11/91 00:06:46	9.06	9.08	9.1
09/11/91 01:06:46	9.06	9.08	9.08
09/11/91 02:06:46	9.06	9.08	9.08
09/11/91 03:06:46	9.06	9.08	9.1
09/11/91 04:06:46	9.06	9.08	9.1
09/11/91 05:06:46	9.06	9.08	9.1
09/11/91 06:06:46	8.99	9.06	9.08
09/11/91 07:06:46	8.89	8.99	9.03
09/11/91 08:06:46	8.85	8.92	9.01
09/11/91 09:06:46	8.85	8.92	8.99

09/11/91	10:06:46	8.85	9.01	9.15
09/11/91	11:06:46	8.78	8.94	9.15
09/11/91	12:06:46	8.82	8.94	9.06
09/11/91	13:06:46	8.96	9.03	9.13
09/11/91	14:06:46	8.94	9.01	9.13
09/11/91	15:06:46	8.94	9.01	9.06
09/11/91	16:06:46	9.01	9.08	9.17
09/11/91	17:06:46	9.08	9.1	9.15
09/11/91	18:06:46	9.06	9.1	9.13
09/11/91	19:06:46	9.03	9.08	9.1
09/11/91	20:06:46	9.01	9.06	9.08
09/11/91	21:06:46	8.99	9.03	9.06
09/11/91	22:06:46	8.99	9.03	9.06
09/11/91	23:06:46	8.99	9.03	9.06
09/12/91	00:06:46	8.99	9.01	9.06
09/12/91	01:06:46	8.99	9.01	9.03
09/12/91	02:06:46	8.99	9.01	9.01
09/12/91	03:06:46	8.99	9.01	9.01
09/12/91	04:06:46	8.99	9.01	9.01
09/12/91	05:06:46	8.99	8.99	9.01
09/12/91	06:06:46	8.89	8.96	8.99
09/12/91	07:06:46	8.85	8.89	8.94
09/12/91	08:06:46	8.82	8.87	8.94
09/12/91	09:06:46	8.8	8.87	8.96
09/12/91	10:06:46	8.78	8.85	8.94
09/12/91	11:06:46	8.8	8.87	8.92
09/12/91	12:06:46	8.78	8.89	9.03
09/12/91	13:06:46	8.78	8.87	9.01
09/12/91	14:06:46	8.8	8.89	8.99
09/12/91	15:06:46	8.87	8.94	8.99
09/12/91	16:06:46	8.92	8.94	9.01
09/12/91	17:06:46	8.94	8.99	9.03
09/12/91	18:06:46	8.94	8.99	9.03
09/12/91	19:06:46	8.92	8.94	8.99
09/12/91	20:06:46	8.92	8.94	8.99
09/12/91	21:06:46	8.89	8.92	8.94
09/12/91	22:06:46	8.89	8.92	8.92
09/12/91	23:06:46	8.89	8.89	8.92
09/13/91	00:06:46	8.89	8.89	8.92
09/13/91	01:06:46	8.89	8.89	8.92
09/13/91	02:06:46	8.89	8.89	8.92
09/13/91	03:06:46	8.89	8.92	8.92
09/13/91	04:06:46	8.89	8.92	8.94
09/13/91	05:06:46	8.87	8.92	8.94
09/13/91	06:06:46	8.82	8.87	8.92
09/13/91	07:06:46	8.75	8.8	8.82
09/13/91	08:06:46	8.71	8.75	8.8
09/13/91	09:06:46	8.66	8.75	8.8
09/13/91	10:06:46	8.71	8.75	8.85
09/13/91	11:06:46	8.64	8.75	8.89
09/13/91	12:06:46	8.66	8.8	8.96
09/13/91	13:06:46	8.73	8.82	8.99
09/13/91	14:06:46	8.68	8.8	8.94
09/13/91	15:06:46	8.8	8.87	8.94
09/13/91	16:06:46	8.82	8.87	8.94
09/13/91	17:06:46	8.82	8.87	8.92

09/13/91 18:06:46	8.82	8.85	8.89
09/13/91 19:06:46	8.82	8.82	8.87
09/13/91 20:06:46	8.82	8.85	8.87
09/13/91 21:06:46	8.8	8.85	8.87
09/13/91 22:06:46	8.8	8.85	8.87
09/13/91 23:06:46	8.8	8.82	8.87
09/14/91 00:06:46	8.8	8.85	8.87
09/14/91 01:06:46	8.8	8.82	8.87
09/14/91 02:06:46	8.8	8.8	8.85
09/14/91 03:06:46	8.8	8.8	8.82
09/14/91 04:06:46	8.8	8.82	8.82
09/14/91 05:06:46	8.78	8.8	8.82
09/14/91 06:06:46	8.73	8.78	8.82
09/14/91 07:06:46	8.66	8.71	8.78
09/14/91 08:06:46	8.62	8.68	8.71
09/14/91 09:06:46	8.62	8.66	8.75
09/14/91 10:06:46	8.59	8.68	8.73
09/14/91 11:06:46	8.62	8.68	8.78
09/14/91 12:06:46	8.64	8.73	8.89
09/14/91 13:06:46	8.62	8.78	8.87
09/14/91 14:06:46	8.57	8.73	8.82
09/14/91 15:06:46	8.71	8.78	8.89
09/14/91 16:06:46	8.73	8.78	8.85
09/14/91 17:06:46	8.78	8.82	8.87
09/14/91 18:06:46	8.78	8.8	8.85
09/14/91 19:06:46	8.75	8.78	8.82
09/14/91 20:06:46	8.73	8.75	8.8
09/14/91 21:06:46	8.71	8.75	8.78
09/14/91 22:06:46	8.71	8.73	8.75
09/14/91 23:06:46	8.71	8.73	8.75
09/15/91 00:06:46	8.71	8.73	8.75
09/15/91 01:06:46	8.71	8.71	8.73
09/15/91 02:06:46	8.68	8.71	8.73
09/15/91 03:06:46	8.71	8.71	8.73
09/15/91 04:06:46	8.71	8.71	8.73
09/15/91 05:06:46	8.68	8.73	8.75
09/15/91 06:06:46	8.62	8.68	8.73
09/15/91 07:06:46	8.57	8.62	8.64
09/15/91 08:06:46	8.5	8.57	8.66
09/15/91 09:06:46	8.48	8.55	8.62
09/15/91 10:06:46	8.52	8.59	8.66
09/15/91 11:06:46	8.45	8.57	8.66
09/15/91 12:06:46	8.52	8.62	8.85
09/15/91 13:06:46	8.59	8.66	8.73
09/15/91 14:06:46	8.57	8.64	8.71
09/15/91 15:06:46	8.62	8.66	8.73
09/15/91 16:06:46	8.66	8.68	8.73
09/15/91 17:06:46	8.66	8.71	8.73
09/15/91 18:06:46	8.66	8.68	8.73
09/15/91 19:06:46	8.64	8.66	8.71
09/15/91 20:06:46	8.62	8.64	8.68
09/15/91 21:06:46	8.62	8.64	8.68
09/15/91 22:06:46	8.62	8.64	8.68
09/15/91 23:06:46	8.62	8.66	8.68
09/16/91 00:06:46	8.64	8.66	8.68
09/16/91 01:06:46	8.64	8.66	8.71

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09/16/91 02:06:46	8.64	8.66	8.71
09/16/91 03:06:46	8.64	8.66	8.68
09/16/91 04:06:46	8.64	8.66	8.68
09/16/91 05:06:46	8.62	8.66	8.68
09/16/91 06:06:46	8.57	8.62	8.66
09/16/91 07:06:46	8.48	8.55	8.59
09/16/91 08:06:46	8.45	8.5	8.57
09/16/91 09:06:46	8.45	8.5	8.57
09/16/91 10:06:46	8.45	8.52	8.59
09/16/91 11:06:46	8.45	8.55	8.62
09/16/91 12:06:46	8.45	8.52	8.64
09/16/91 13:06:46	8.43	8.59	8.73
09/16/91 14:06:46	8.48	8.59	8.66
09/16/91 15:06:46	8.52	8.62	8.73
09/16/91 16:06:46	8.62	8.64	8.73
09/16/91 17:06:46	8.62	8.66	8.68
09/16/91 18:06:46	8.59	8.64	8.66
09/16/91 19:06:46	8.59	8.62	8.62
09/16/91 20:06:46	8.57	8.62	8.66
09/16/91 21:06:46	8.57	8.59	8.64
09/16/91 22:06:46	8.57	8.59	8.64
09/16/91 23:06:46	8.57	8.62	8.64
09/17/91 00:06:46	8.59	8.62	8.64
09/17/91 01:06:46	8.59	8.62	8.64
09/17/91 02:06:46	8.59	8.64	8.66
09/17/91 03:06:46	8.59	8.62	8.66
09/17/91 04:06:46	8.59	8.62	8.66
09/17/91 05:06:46	8.57	8.59	8.64
09/17/91 06:06:46	8.55	8.59	8.62
09/17/91 07:06:46	8.48	8.55	8.59
09/17/91 08:06:46	8.43	8.48	8.59
09/17/91 09:06:46	8.43	8.5	8.59
09/17/91 10:06:46	8.38	8.5	8.57
09/17/91 11:06:46	8.38	8.5	8.62
09/17/91 12:06:46	8.45	8.52	8.62
09/17/91 13:06:46	8.43	8.59	8.8
09/17/91 14:06:46	8.48	8.59	8.71
09/17/91 15:06:46	8.55	8.62	8.71
09/17/91 16:06:46	8.57	8.62	8.68
09/17/91 17:06:46	8.59	8.62	8.66
09/17/91 18:06:46	8.59	8.62	8.64
09/17/91 19:06:46	8.57	8.62	8.66
09/17/91 20:06:46	8.57	8.57	8.59
09/17/91 21:06:46	8.55	8.57	8.57
09/17/91 22:06:46	8.55	8.55	8.57
09/17/91 23:06:46	8.52	8.55	8.57
09/18/91 00:06:46	8.52	8.55	8.59
09/18/91 01:06:46	8.55	8.57	8.59
09/18/91 02:06:46	8.55	8.57	8.62
09/18/91 03:06:46	8.57	8.57	8.59
09/18/91 04:06:46	8.55	8.57	8.57
09/18/91 05:06:46	8.55	8.55	8.57
09/18/91 06:06:46	8.45	8.52	8.55
09/18/91 07:06:46	8.38	8.43	8.48
09/18/91 08:06:46	8.34	8.43	8.5
09/18/91 09:06:46	8.38	8.48	8.62

09/18/91	10:06:46	8.27	8.41	8.55
09/18/91	11:06:46	8.31	8.45	8.64
09/18/91	12:06:46	8.29	8.55	8.73
09/18/91	13:06:46	8.5	8.55	8.62
09/18/91	14:06:46	8.34	8.43	8.52
09/18/91	15:06:46	8.41	8.5	8.64
09/18/91	16:06:46	8.43	8.55	8.68
09/18/91	17:06:46	8.52	8.55	8.62
09/18/91	18:06:46	8.52	8.57	8.62
09/18/91	19:06:46	8.5	8.52	8.57
09/18/91	20:06:46	8.48	8.5	8.55
09/18/91	21:06:46	8.45	8.5	8.52
09/18/91	22:06:46	8.45	8.48	8.52
09/18/91	23:06:46	8.45	8.48	8.52
09/19/91	00:06:46	8.45	8.48	8.52
09/19/91	01:06:46	8.45	8.48	8.52
09/19/91	02:06:46	8.45	8.5	8.52
09/19/91	03:06:46	8.45	8.5	8.52
09/19/91	04:06:46	8.48	8.5	8.52
09/19/91	05:06:46	8.45	8.48	8.5
09/19/91	06:06:46	8.38	8.45	8.5
09/19/91	07:06:46	8.29	8.34	8.38
09/19/91	08:06:46	8.24	8.34	8.41
09/19/91	09:06:46	8.24	8.41	8.57
08/16/91	21:31:06	10.06	10.06	10.08
08/16/91	22:31:06	10.06	10.06	10.08
08/16/91	23:31:06	10.06	10.08	10.08
08/17/91	00:31:06	10.06	10.08	10.08
08/17/91	01:31:06	10.06	10.08	10.1
08/17/91	02:31:06	10.08	10.08	10.12
08/17/91	03:31:06	10.06	10.08	10.1
08/17/91	04:31:06	10.06	10.08	10.1
08/17/91	05:31:06	10.03	10.06	10.08
08/17/91	06:31:06	9.99	10.03	10.08
08/17/91	07:31:06	9.94	9.99	10.03
08/17/91	08:31:06	9.92	9.94	10.01
08/17/91	09:31:06	9.92	9.96	10.03
08/17/91	10:31:06	9.89	9.96	10.06
08/17/91	11:31:06	9.85	9.94	10.08
08/17/91	12:31:06	9.85	9.94	10.03
08/17/91	13:31:06	9.87	9.99	10.1
08/17/91	14:31:06	9.89	10.01	10.17
08/17/91	15:31:06	9.89	10.01	10.06
08/17/91	16:31:06	9.94	10.01	10.06
08/17/91	17:31:06	9.99	10.03	10.08
08/17/91	18:31:06	10.01	10.03	10.06
08/17/91	19:31:06	10.01	10.03	10.06
08/17/91	20:31:06	9.99	10.01	10.06
08/17/91	21:31:06	9.99	9.99	10.01
08/17/91	22:31:06	9.99	9.99	10.01
08/17/91	23:31:06	9.99	10.01	10.01
08/18/91	00:31:06	10.01	10.01	10.03
08/18/91	01:31:06	10.01	10.03	10.03
08/18/91	02:31:06	10.01	10.03	10.03
08/18/91	03:31:06	10.01	10.06	10.06
08/18/91	04:31:06	9.99	10.01	10.06

08/18/91 05:31:06	9.96	9.99	10.03
08/18/91 06:31:06	9.87	9.92	9.96
08/18/91 07:31:06	9.8	9.87	9.92
08/18/91 08:31:06	9.78	9.85	9.92
08/18/91 09:31:06	9.78	9.87	9.96
08/18/91 10:31:06	9.78	9.87	9.99
08/18/91 11:31:06	9.78	9.87	10.01
08/18/91 12:31:06	9.78	9.85	9.96
08/18/91 13:31:06	9.78	9.87	9.96
08/18/91 14:31:06	9.8	9.89	10.06
08/18/91 15:31:06	9.8	9.92	10.03
08/18/91 16:31:06	9.85	9.92	9.99
08/18/91 17:31:06	9.92	9.94	9.99
08/18/91 18:31:06	9.89	9.94	9.99
08/18/91 19:31:06	9.87	9.89	9.94
08/18/91 20:31:06	9.85	9.89	9.92
08/18/91 21:31:06	9.85	9.87	9.89
08/18/91 22:31:06	9.82	9.87	9.89
08/18/91 23:31:06	9.82	9.87	9.89
08/19/91 00:31:06	9.82	9.87	9.89
08/19/91 01:31:06	9.82	9.85	9.89
08/19/91 02:31:06	9.82	9.82	9.85
08/19/91 03:31:06	9.82	9.82	9.85
08/19/91 04:31:06	9.8	9.82	9.85
08/19/91 05:31:06	9.78	9.8	9.82
08/19/91 06:31:06	9.66	9.73	9.78
08/19/91 07:31:06	9.64	9.68	9.75
08/19/91 08:31:06	9.59	9.66	9.73
08/19/91 09:31:06	9.61	9.68	9.75
08/19/91 10:31:06	9.57	9.66	9.78
08/19/91 11:31:06	9.61	9.71	9.85
08/19/91 12:31:06	9.61	9.71	9.85
08/19/91 13:31:06	9.66	9.75	9.92
08/19/91 14:31:06	9.61	9.73	9.87
08/19/91 15:31:06	9.66	9.78	9.87
08/19/91 16:31:06	9.68	9.78	9.85
08/19/91 17:31:06	9.73	9.75	9.8
08/19/91 18:31:06	9.68	9.73	9.8
08/19/91 19:31:06	9.68	9.68	9.71
08/19/91 20:31:06	9.66	9.68	9.73
08/19/91 21:31:06	9.66	9.71	9.73
08/19/91 22:31:06	9.66	9.68	9.73
08/19/91 23:31:06	9.66	9.68	9.68
08/20/91 00:31:06	9.66	9.68	9.68
08/20/91 01:31:06	9.66	9.68	9.71
08/20/91 02:31:06	9.66	9.68	9.71
08/20/91 03:31:06	9.68	9.68	9.71
08/20/91 04:31:06	9.68	9.68	9.71
08/20/91 05:31:06	9.68	9.68	9.71
08/20/91 06:31:06	9.64	9.68	9.71
08/20/91 07:31:06	9.47	9.64	9.75
08/20/91 08:31:06	9.47	9.59	9.73
08/20/91 09:31:06	9.54	9.61	9.71
08/20/91 10:31:06	9.54	9.61	9.78
08/20/91 11:31:06	9.52	9.61	9.78
08/20/91 12:31:06	9.52	9.68	9.89

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08/20/91 13:31:06	9.47	9.66	9.82
08/20/91 14:31:06	9.54	9.66	9.78
08/20/91 15:31:06	9.61	9.68	9.78
08/20/91 16:31:06	9.66	9.73	9.8
08/20/91 17:31:06	9.68	9.71	9.75
08/20/91 18:31:06	9.68	9.71	9.75
08/20/91 19:31:06	9.66	9.68	9.73
08/20/91 20:31:06	9.64	9.68	9.68
08/20/91 21:31:06	9.61	9.64	9.68
08/20/91 22:31:06	9.61	9.64	9.64
08/20/91 23:31:06	9.61	9.61	9.64
08/21/91 00:31:06	9.61	9.64	9.64
08/21/91 01:31:06	9.61	9.64	9.64
08/21/91 02:31:06	9.61	9.64	9.66
08/21/91 03:31:06	9.61	9.64	9.66
08/21/91 04:31:06	9.59	9.61	9.64
08/21/91 05:31:06	9.54	9.59	9.61
08/21/91 06:31:06	9.43	9.5	9.59
08/21/91 07:31:06	9.4	9.45	9.5
08/21/91 08:31:06	9.38	9.45	9.57

WMW 2-3

WMW2-3	Time	Min	Mean	Max
09/19/91	12:58:15	8.24	8.38	8.64
09/19/91	13:58:15	8.29	8.43	8.57
09/19/91	14:58:15	8.29	8.36	8.45
09/19/91	15:58:15	8.34	8.45	8.57
09/19/91	16:58:15	8.36	8.45	8.52
09/19/91	17:58:15	8.41	8.45	8.5
09/19/91	18:58:15	8.38	8.43	8.45
09/19/91	19:58:15	8.36	8.38	8.41
09/19/91	20:58:15	8.36	8.38	8.38
09/19/91	21:58:15	8.36	8.38	8.38
09/19/91	22:58:15	8.36	8.38	8.41
09/19/91	23:58:15	8.36	8.38	8.41
09/20/91	00:58:15	8.36	8.38	8.41
09/20/91	01:58:15	8.38	8.41	8.43
09/20/91	02:58:15	8.38	8.43	8.45
09/20/91	03:58:15	8.41	8.43	8.45
09/20/91	04:58:15	8.38	8.43	8.45
09/20/91	05:58:15	8.38	8.41	8.43
09/20/91	06:58:15	8.36	8.38	8.41
09/20/91	07:58:15	8.34	8.36	8.38
09/20/91	08:58:15	8.34	8.36	8.38
09/20/91	09:58:15	8.31	8.34	8.38
09/20/91	10:58:15	8.31	8.34	8.38
09/20/91	11:58:15	8.27	8.31	8.36
09/20/91	12:58:15	8.24	8.31	8.36
09/20/91	13:58:15	8.27	8.31	8.34
09/20/91	14:58:15	8.29	8.31	8.36
09/20/91	15:58:15	8.29	8.34	8.36
09/20/91	16:58:15	8.29	8.34	8.36
09/20/91	17:58:15	8.29	8.31	8.34
09/20/91	18:58:15	8.29	8.31	8.34
09/20/91	19:58:15	8.29	8.29	8.31
09/20/91	20:58:15	8.27	8.27	8.29
09/20/91	21:58:15	8.27	8.27	8.29
09/20/91	22:58:15	8.24	8.27	8.27
09/20/91	23:58:15	8.27	8.29	8.29
09/21/91	00:58:15	8.27	8.29	8.29
09/21/91	01:58:15	8.27	8.29	8.29
09/21/91	02:58:15	8.29	8.29	8.34
09/21/91	03:58:15	8.29	8.31	8.34
09/21/91	04:58:15	8.29	8.34	8.36
09/21/91	05:58:15	8.29	8.31	8.34
09/21/91	06:58:15	8.27	8.29	8.34
09/21/91	07:58:15	8.24	8.27	8.31
09/21/91	08:58:15	8.22	8.24	8.29
09/21/91	09:58:15	8.03	8.15	8.29
09/21/91	10:58:15	8.15	8.24	8.31
09/21/91	11:58:15	7.99	8.2	8.29
09/21/91	12:58:15	8.08	8.22	8.31
09/21/91	13:58:15	8.13	8.24	8.31
09/21/91	14:58:15	8.08	8.24	8.36
09/21/91	15:58:15	8.2	8.27	8.34
09/21/91	16:58:15	8.22	8.27	8.31

09/21/91	18:58:15	8.27	8.27	8.31
09/21/91	19:58:15	8.22	8.27	8.31
09/21/91	20:58:15	8.2	8.22	8.24
09/21/91	21:58:15	8.2	8.22	8.24
09/21/91	22:58:15	8.2	8.22	8.24
09/21/91	23:58:15	8.2	8.22	8.27
09/22/91	00:58:15	8.2	8.24	8.27
09/22/91	01:58:15	8.2	8.24	8.27
09/22/91	02:58:15	8.2	8.24	8.27
09/22/91	03:58:15	8.22	8.24	8.27
09/22/91	04:58:15	8.22	8.24	8.27
09/22/91	05:58:15	8.22	8.24	8.27
09/22/91	06:58:15	8.17	8.22	8.27
09/22/91	07:58:15	8.13	8.17	8.2
09/22/91	08:58:15	7.99	8.08	8.17
09/22/91	09:58:15	8.01	8.08	8.2
09/22/91	10:58:15	8.01	8.1	8.2
09/22/91	11:58:15	7.99	8.1	8.22
09/22/91	12:58:15	7.97	8.1	8.24
09/22/91	13:58:15	8.01	8.15	8.29
09/22/91	14:58:15	7.94	8.17	8.29
09/22/91	15:58:15	8.03	8.2	8.27
09/22/91	16:58:15	8.15	8.2	8.27
09/22/91	17:58:15	8.15	8.17	8.22
09/22/91	18:58:15	8.17	8.17	8.22
09/22/91	19:58:15	8.17	8.17	8.22
09/22/91	20:58:15	8.15	8.17	8.22
09/22/91	21:58:15	8.15	8.17	8.2
09/22/91	22:58:15	8.15	8.17	8.2
09/22/91	23:58:15	8.15	8.17	8.2
09/23/91	00:58:15	8.17	8.17	8.2
09/23/91	01:58:15	8.17	8.2	8.2
09/23/91	02:58:15	8.17	8.2	8.2
09/23/91	03:58:15	8.2	8.2	8.24
09/23/91	04:58:15	8.17	8.22	8.24
09/23/91	05:58:15	8.17	8.2	8.24
09/23/91	06:58:15	8.1	8.15	8.2
09/23/91	07:58:15	8.03	8.08	8.15
09/23/91	08:58:15	8.01	8.1	8.2
09/23/91	09:58:15	7.97	8.08	8.17
09/23/91	10:58:15	8.01	8.06	8.17
09/23/91	11:58:15	7.92	8.08	8.29
09/23/91	12:58:15	7.99	8.13	8.36
09/23/91	13:58:15	7.94	8.15	8.31
09/23/91	14:58:15	8.01	8.17	8.31
09/23/91	15:58:15	8.06	8.13	8.29
09/23/91	16:58:15	8.1	8.17	8.22
09/23/91	17:58:15	8.17	8.2	8.27
09/23/91	18:58:15	8.17	8.2	8.24
09/23/91	19:58:15	8.15	8.17	8.22
09/23/91	20:58:15	8.13	8.15	8.2
09/23/91	21:58:15	8.1	8.13	8.17
09/23/91	22:58:15	8.1	8.15	8.17
09/23/91	23:58:15	8.1	8.13	8.17
09/24/91	00:58:15	8.13	8.15	8.15

09/24/91	02:58:15	8.15	8.17	8.17
09/24/91	03:58:15	8.15	8.17	8.2
09/24/91	04:58:15	8.17	8.17	8.2
09/24/91	05:58:15	8.17	8.17	8.2
09/24/91	06:58:15	8.1	8.15	8.17
09/24/91	07:58:15	8.1	8.13	8.17
09/24/91	08:58:15	8.06	8.1	8.17
09/24/91	09:58:15	7.9	8.03	8.13
09/24/91	10:58:15	7.99	8.08	8.22
09/24/91	11:58:15	7.99	8.13	8.29
09/24/91	12:58:15	7.94	8.15	8.29
09/24/91	13:58:15	7.94	8.17	8.38
09/24/91	14:58:15	8.01	8.2	8.29
09/24/91	15:58:15	8.01	8.15	8.24
09/24/91	16:58:15	8.13	8.22	8.34
09/24/91	17:58:15	8.22	8.24	8.29
09/24/91	18:58:15	8.2	8.24	8.29
09/24/91	19:58:15	8.17	8.22	8.24
09/24/91	20:58:15	8.17	8.17	8.2
09/24/91	21:58:15	8.17	8.17	8.2
09/24/91	22:58:15	8.15	8.17	8.2
09/24/91	23:58:15	8.17	8.2	8.22
09/25/91	00:58:15	8.17	8.2	8.24
09/25/91	01:58:15	8.17	8.22	8.24
09/25/91	02:58:15	8.2	8.22	8.27
09/25/91	03:58:15	8.22	8.24	8.27
09/25/91	04:58:15	8.2	8.22	8.27
09/25/91	05:58:15	8.2	8.22	8.27
09/25/91	06:58:15	8.2	8.22	8.22
09/25/91	07:58:15	8.17	8.2	8.22
09/25/91	08:58:15	8.15	8.2	8.22
09/25/91	09:58:15	8.2	8.2	8.24
09/25/91	10:58:15	8.17	8.2	8.24
09/25/91	11:58:15	8.17	8.22	8.27
09/25/91	12:58:15	8.2	8.22	8.24
09/25/91	13:58:15	8.17	8.22	8.29
09/25/91	14:58:15	8.2	8.24	8.29
09/25/91	15:58:15	8.15	8.22	8.29
09/25/91	16:58:15	8.22	8.27	8.31
09/25/91	17:58:15	8.2	8.24	8.29
09/25/91	18:58:15	8.2	8.22	8.27
09/25/91	19:58:15	8.17	8.2	8.24
09/25/91	20:58:15	8.17	8.2	8.22
09/25/91	21:58:15	8.17	8.2	8.22
09/25/91	22:58:15	8.17	8.17	8.22
09/25/91	23:58:15	8.15	8.17	8.22
09/26/91	00:58:15	8.15	8.2	8.22
09/26/91	01:58:15	8.15	8.17	8.22
09/26/91	02:58:15	8.15	8.17	8.22
09/26/91	03:58:15	8.15	8.15	8.17
09/26/91	04:58:15	8.15	8.17	8.2
09/26/91	05:58:15	8.1	8.13	8.17
09/26/91	06:58:15	8.06	8.1	8.13
09/26/91	07:58:15	7.99	8.03	8.1
09/26/91	08:58:15	7.97	8.01	8.08

200

09/26/91 10:58:15	7.94	7.99	8.08
09/26/91 11:58:15	7.92	8.01	8.1
09/26/91 12:58:15	7.9	8.01	8.17
09/26/91 13:58:15	7.92	8.03	8.24
09/26/91 14:58:15	7.92	8.06	8.27
09/26/91 15:58:15	7.94	8.03	8.15
09/26/91 16:58:15	7.99	8.06	8.15
09/26/91 17:58:15	8.06	8.06	8.1
09/26/91 18:58:15	8.01	8.06	8.08
09/26/91 19:58:15	7.99	8.03	8.06
09/26/91 20:58:15	7.97	7.99	8.01
09/26/91 21:58:15	7.94	7.97	7.99
09/26/91 22:58:15	7.94	7.97	7.99
09/26/91 23:58:15	7.94	7.97	7.99
09/27/91 00:58:15	7.94	7.97	7.97
09/27/91 01:58:15	7.94	7.97	7.97
09/27/91 02:58:15	7.94	7.97	7.97
09/27/91 03:58:15	7.94	7.97	7.99
09/27/91 04:58:15	7.92	7.97	7.99
09/27/91 05:58:15	7.87	7.94	7.97
09/27/91 06:58:15	7.85	7.9	7.92
09/27/91 07:58:15	7.78	7.83	7.9
09/27/91 08:58:15	7.73	7.8	7.87
09/27/91 09:58:15	7.71	7.78	7.87
09/27/91 10:58:15	7.69	7.78	7.87
09/27/91 11:58:15	7.69	7.78	7.9
09/27/91 12:58:15	7.69	7.8	7.92
09/27/91 13:58:15	7.76	7.83	7.9
09/27/91 14:58:15	7.76	7.83	7.99
09/27/91 15:58:15	7.73	7.85	7.97
09/27/91 16:58:15	7.78	7.85	7.92
09/27/91 17:58:15	7.85	7.85	7.9
09/27/91 18:58:15	7.83	7.87	7.9
09/27/91 19:58:15	7.8	7.83	7.87
09/27/91 20:58:15	7.78	7.8	7.83
09/27/91 21:58:15	7.78	7.8	7.83
09/27/91 22:58:15	7.76	7.78	7.83
09/27/91 23:58:15	7.76	7.78	7.78
09/28/91 00:58:15	7.76	7.78	7.8
09/28/91 01:58:15	7.76	7.78	7.8
09/28/91 02:58:15	7.76	7.78	7.83
09/28/91 03:58:15	7.78	7.8	7.83
09/28/91 04:58:15	7.73	7.78	7.8
09/28/91 05:58:15	7.73	7.76	7.78
09/28/91 06:58:15	7.69	7.76	7.78
09/28/91 07:58:15	7.57	7.64	7.73
09/28/91 08:58:15	7.59	7.62	7.69
09/28/91 09:58:15	7.55	7.62	7.69
09/28/91 10:58:15	7.5	7.62	7.73
09/28/91 11:58:15	7.55	7.62	7.71
09/28/91 12:58:15	7.55	7.62	7.78
09/28/91 13:58:15	7.55	7.64	7.73
09/28/91 14:58:15	7.57	7.66	7.73
09/28/91 15:58:15	7.59	7.66	7.73
09/28/91 16:58:15	7.59	7.66	7.78

09/28/91 18:58:15	7.69	7.71	7.76
09/28/91 19:58:15	7.64	7.69	7.73
09/28/91 20:58:15	7.64	7.66	7.71
09/28/91 21:58:15	7.64	7.66	7.69
09/28/91 22:58:15	7.62	7.64	7.69
09/28/91 23:58:15	7.62	7.64	7.69
09/29/91 00:58:15	7.62	7.66	7.69
09/29/91 01:58:15	7.62	7.64	7.69
09/29/91 02:58:15	7.64	7.66	7.69
09/29/91 03:58:15	7.66	7.66	7.69
09/29/91 04:58:15	7.64	7.66	7.69
09/29/91 05:58:15	7.64	7.64	7.69
09/29/91 06:58:15	7.59	7.64	7.69
09/29/91 07:58:15	7.57	7.59	7.64
09/29/91 08:58:15	7.48	7.55	7.62
09/29/91 09:58:15	7.45	7.55	7.62
09/29/91 10:58:15	7.45	7.57	7.69
09/29/91 11:58:15	7.45	7.59	7.66
09/29/91 12:58:15	7.45	7.59	7.66
09/29/91 13:58:15	7.52	7.62	7.69
09/29/91 14:58:15	7.59	7.64	7.69
09/29/91 15:58:15	7.59	7.64	7.71
09/29/91 16:58:15	7.62	7.66	7.69
09/29/91 17:58:15	7.64	7.64	7.69
09/29/91 18:58:15	7.62	7.64	7.69
09/29/91 19:58:15	7.62	7.64	7.66
09/29/91 20:58:15	7.62	7.64	7.69
09/29/91 21:58:15	7.62	7.64	7.69
09/29/91 22:58:15	7.62	7.64	7.69
09/29/91 23:58:15	7.62	7.64	7.69
09/30/91 00:58:15	7.62	7.66	7.69
09/30/91 01:58:15	7.64	7.66	7.71
09/30/91 02:58:15	7.66	7.69	7.71
09/30/91 03:58:15	7.64	7.69	7.71
09/30/91 04:58:15	7.64	7.66	7.69
09/30/91 05:58:15	7.64	7.64	7.66
09/30/91 06:58:15	7.59	7.64	7.66
09/30/91 07:58:15	7.55	7.62	7.64
09/30/91 08:58:15	7.48	7.55	7.64
09/30/91 09:58:15	7.5	7.59	7.71
09/30/91 10:58:15	7.48	7.57	7.69
09/30/91 11:58:15	7.55	7.64	7.73
09/30/91 12:58:15	7.5	7.62	7.69
09/30/91 13:58:15	7.5	7.62	7.76
09/30/91 14:58:15	7.52	7.64	7.8
09/30/91 15:58:15	7.64	7.69	7.73
09/30/91 16:58:15	7.64	7.69	7.71
09/30/91 17:58:15	7.66	7.69	7.73
09/30/91 18:58:15	7.66	7.69	7.73
09/30/91 19:58:15	7.64	7.66	7.71
09/30/91 20:58:15	7.64	7.69	7.71
09/30/91 21:58:15	7.64	7.69	7.71
09/30/91 22:58:15	7.64	7.66	7.69
09/30/91 23:58:15	7.64	7.69	7.71
10/01/91 00:58:15	7.66	7.69	7.71

10/01/91	02:58:15	7.69	7.71	7.73
10/01/91	03:58:15	7.69	7.71	7.76
10/01/91	04:58:15	7.69	7.73	7.76
10/01/91	05:58:15	7.69	7.71	7.73
10/01/91	06:58:15	7.66	7.69	7.73
10/01/91	07:58:15	7.62	7.64	7.71
10/01/91	08:58:15	7.52	7.64	7.73
10/01/91	09:58:15	7.59	7.66	7.71
10/01/91	10:58:15	7.52	7.59	7.69
10/01/91	11:58:15	7.5	7.64	7.78
10/01/91	12:58:15	7.45	7.64	7.78
10/01/91	13:58:15	7.59	7.69	7.78
10/01/91	14:58:15	7.66	7.71	7.78
10/01/91	15:58:15	7.69	7.71	7.76
10/01/91	16:58:15	7.71	7.73	7.76
10/01/91	17:58:15	7.71	7.73	7.76
10/01/91	18:58:15	7.71	7.71	7.73
10/01/91	19:58:15	7.69	7.73	7.76
10/01/91	20:58:15	7.69	7.71	7.76
10/01/91	21:58:15	7.69	7.73	7.73
10/01/91	22:58:15	7.69	7.71	7.73
10/01/91	23:58:15	7.69	7.71	7.73
10/02/91	00:58:15	7.71	7.73	7.73
10/02/91	01:58:15	7.71	7.73	7.73
10/02/91	02:58:15	7.71	7.73	7.76
10/02/91	03:58:15	7.71	7.73	7.76
10/02/91	04:58:15	7.73	7.73	7.76
10/02/91	05:58:15	7.73	7.73	7.78
10/02/91	06:58:15	7.71	7.73	7.78
10/02/91	07:58:15	7.71	7.71	7.76
10/02/91	08:58:15	7.71	7.73	7.76
10/02/91	09:58:15	7.69	7.71	7.73
10/02/91	10:58:15	7.66	7.73	7.8
10/02/91	11:58:15	7.69	7.73	7.78
10/02/91	12:58:15	7.69	7.73	7.8
10/02/91	13:58:15	7.73	7.78	7.83
10/02/91	14:58:15	7.76	7.78	7.8
10/02/91	15:58:15	7.76	7.8	7.83
10/02/91	16:58:15	7.78	7.8	7.85
10/02/91	17:58:15	7.8	7.83	7.83
10/02/91	18:58:15	7.76	7.8	7.83
10/02/91	19:58:15	7.73	7.76	7.8
10/02/91	20:58:15	7.71	7.73	7.76
10/02/91	21:58:15	7.71	7.73	7.73
10/02/91	22:58:15	7.71	7.71	7.73
10/02/91	23:58:15	7.71	7.73	7.73
10/03/91	00:58:15	7.71	7.71	7.73
10/03/91	01:58:15	7.71	7.71	7.73
10/03/91	02:58:15	7.69	7.71	7.71
10/03/91	03:58:15	7.69	7.69	7.71
10/03/91	04:58:15	7.64	7.69	7.69
10/03/91	05:58:15	7.64	7.64	7.69
10/03/91	06:58:15	7.59	7.62	7.64
10/03/91	07:58:15	7.57	7.62	7.64
10/03/91	08:58:15	7.55	7.59	7.64

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10/03/91	10:58:15	7.48	7.52	7.62
10/03/91	11:58:15	7.34	7.5	7.59
10/03/91	12:58:15	7.45	7.55	7.64
10/03/91	13:58:15	7.43	7.55	7.76
10/03/91	14:58:15	7.55	7.64	7.71
10/03/91	15:58:15	7.43	7.62	7.69
10/03/91	16:58:15	7.55	7.62	7.66
10/03/91	17:58:15	7.62	7.64	7.69
10/03/91	18:58:15	7.59	7.62	7.66
10/03/91	19:58:15	7.57	7.59	7.62
10/03/91	20:58:15	7.55	7.57	7.59
10/03/91	21:58:15	7.55	7.55	7.57
10/03/91	22:58:15	7.55	7.55	7.59
10/03/91	23:58:15	7.55	7.57	7.62
10/04/91	00:58:15	7.55	7.59	7.62
10/04/91	01:58:15	7.55	7.59	7.62
10/04/91	02:58:15	7.57	7.59	7.62
10/04/91	03:58:15	7.57	7.59	7.62
10/04/91	04:58:15	7.57	7.59	7.59
10/04/91	05:58:15	7.55	7.57	7.59
10/04/91	06:58:15	7.52	7.55	7.57
10/04/91	07:58:15	7.41	7.48	7.57
10/04/91	08:58:15	7.38	7.43	7.57
10/04/91	09:58:15	7.38	7.45	7.59
10/04/91	10:58:15	7.43	7.5	7.62
10/04/91	11:58:15	7.41	7.5	7.59
10/04/91	12:58:15	7.34	7.48	7.57
10/04/91	13:58:15	7.48	7.55	7.62
10/04/91	14:58:15	7.48	7.55	7.62
10/04/91	15:58:15	7.55	7.59	7.64
10/04/91	16:58:15	7.55	7.57	7.62
10/04/91	17:58:15	7.57	7.59	7.62
10/04/91	18:58:15	7.55	7.57	7.59
10/04/91	19:58:15	7.52	7.57	7.59
10/04/91	20:58:15	7.5	7.55	7.57
10/04/91	21:58:15	7.48	7.55	7.55
10/04/91	22:58:15	7.5	7.52	7.57
10/04/91	23:58:15	7.52	7.55	7.57
10/05/91	00:58:15	7.55	7.55	7.59
10/05/91	01:58:15	7.55	7.55	7.59
10/05/91	02:58:15	7.55	7.57	7.59
10/05/91	03:58:15	7.55	7.57	7.57
10/05/91	04:58:15	7.52	7.55	7.57
10/05/91	05:58:15	7.52	7.55	7.55
10/05/91	06:58:15	7.52	7.55	7.57
10/05/91	07:58:15	7.5	7.52	7.55
10/05/91	08:58:15	7.48	7.52	7.55
10/05/91	09:58:15	7.41	7.48	7.55
10/05/91	10:58:15	7.48	7.5	7.57
10/05/91	11:58:15	7.43	7.5	7.59
10/05/91	12:58:15	7.48	7.57	7.76
10/05/91	13:58:15	7.45	7.52	7.64
10/05/91	14:58:15	7.55	7.62	7.66
10/05/91	15:58:15	7.48	7.62	7.69
10/05/91	16:58:15	7.62	7.66	7.71

10/05/91 18:58:15	7.62	7.62	7.66
10/05/91 19:58:15	7.62	7.62	7.66
10/05/91 20:58:15	7.64	7.69	7.69
10/05/91 21:58:15	7.64	7.64	7.69
10/05/91 22:58:15	7.64	7.66	7.69
10/05/91 23:58:15	7.66	7.69	7.73
10/06/91 00:58:15	7.69	7.71	7.76
10/06/91 01:58:15	7.71	7.73	7.78
10/06/91 02:58:15	7.71	7.73	7.73
10/06/91 03:58:15	7.73	7.76	7.76
10/06/91 04:58:15	7.73	7.76	7.78
10/06/91 05:58:15	7.73	7.76	7.78
10/06/91 06:58:15	7.73	7.76	7.78
10/06/91 07:58:15	7.73	7.76	7.78
10/06/91 08:58:15	7.73	7.76	7.8
10/06/91 09:58:15	7.57	7.71	7.78
10/06/91 10:58:15	7.59	7.69	7.83
10/06/91 11:58:15	7.57	7.71	7.83
10/06/91 12:58:15	7.62	7.76	7.9
10/06/91 13:58:15	7.66	7.8	7.92
10/06/91 14:58:15	7.69	7.78	7.85
10/06/91 15:58:15	7.71	7.83	7.92
10/06/91 16:58:15	7.76	7.85	7.92
10/06/91 17:58:15	7.83	7.85	7.9
10/06/91 18:58:15	7.8	7.83	7.87
10/06/91 19:58:15	7.78	7.8	7.83
10/06/91 20:58:15	7.78	7.83	7.83
10/06/91 21:58:15	7.76	7.78	7.83
10/06/91 22:58:15	7.76	7.8	7.83
10/06/91 23:58:15	7.78	7.8	7.83
10/07/91 00:58:15	7.78	7.8	7.83
10/07/91 01:58:15	7.78	7.8	7.83
10/07/91 02:58:15	7.78	7.83	7.83
10/07/91 03:58:15	7.78	7.83	7.85
10/07/91 04:58:15	7.78	7.8	7.85
10/07/91 05:58:15	7.8	7.8	7.83
10/07/91 06:58:15	7.78	7.8	7.83
10/07/91 07:58:15	7.59	7.73	7.8
10/07/91 08:58:15	7.62	7.69	7.8
10/07/91 09:58:15	7.64	7.73	7.85
10/07/91 10:58:15	7.62	7.69	7.8
10/07/91 11:58:15	7.62	7.73	7.87
10/07/91 12:58:15	7.66	7.73	7.83
10/07/91 13:58:15	7.71	7.8	7.92
10/07/91 14:58:15	7.69	7.83	7.92
10/07/91 15:58:15	7.76	7.85	7.9
10/07/91 16:58:15	7.83	7.85	7.92
10/07/91 17:58:15	7.87	7.9	7.94
10/07/91 18:58:15	7.85	7.9	7.94
10/07/91 19:58:15	7.85	7.87	7.9
10/07/91 20:58:15	7.85	7.87	7.9
10/07/91 21:58:15	7.83	7.85	7.87
10/07/91 22:58:15	7.83	7.85	7.87
10/07/91 23:58:15	7.85	7.87	7.87
10/08/91 00:58:15	7.85	7.87	7.87

10/08/91 02:58:15	7.85	7.87	7.9
10/08/91 03:58:15	7.85	7.9	7.9
10/08/91 04:58:15	7.85	7.87	7.9
10/08/91 05:58:15	7.85	7.87	7.9
10/08/91 06:58:15	7.83	7.85	7.9
10/08/91 07:58:15	7.71	7.76	7.85
10/08/91 08:58:15	7.71	7.76	7.85
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10/08/91 16:58:15	7.83	7.9	7.94
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10/08/91 18:58:15	7.9	7.92	7.97
10/08/91 19:58:15	7.87	7.9	7.9
10/08/91 20:58:15	7.85	7.87	7.9
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10/08/91 22:58:15	7.85	7.87	7.9
10/08/91 23:58:15	7.85	7.87	7.92
10/09/91 00:58:15	7.87	7.92	7.92
10/09/91 01:58:15	7.87	7.9	7.92
10/09/91 02:58:15	7.87	7.9	7.92
10/09/91 03:58:15	7.9	7.92	7.94
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10/09/91 06:58:15	7.85	7.87	7.9
10/09/91 07:58:15	7.78	7.85	7.9
10/09/91 08:58:15	7.78	7.83	7.85
10/09/91 09:58:15	7.71	7.83	7.87
10/09/91 10:58:15	7.69	7.76	7.9
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10/09/91 14:58:15	7.83	7.9	7.97
10/09/91 15:58:15	7.83	7.9	7.97
10/09/91 16:58:15	7.9	7.94	7.99
10/09/91 17:58:15	7.9	7.94	8.01
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10/09/91 19:58:15	7.87	7.92	7.99
10/09/91 20:58:15	7.87	7.9	7.97
10/09/91 21:58:15	7.87	7.92	7.97
10/09/91 22:58:15	7.9	7.92	7.97
10/09/91 23:58:15	7.92	7.94	7.99
10/10/91 00:58:15	7.92	7.94	7.99
10/10/91 01:58:15	7.92	7.94	7.97
10/10/91 02:58:15	7.94	7.97	7.97
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10/10/91 04:58:15	7.94	7.97	7.99
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10/10/91 06:58:15	7.94	7.97	7.99
10/10/91 07:58:15	7.9	7.94	7.99
10/10/91 08:58:15	7.85	7.9	7.97

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10/10/91 13:58:15	7.87	7.97	8.06
10/10/91 14:58:15	7.87	8.01	8.15
10/10/91 15:58:15	7.97	8.03	8.15
10/10/91 16:58:15	7.97	8.01	8.06
10/10/91 17:58:15	8.01	8.03	8.06
10/10/91 18:58:15	8.03	8.06	8.1
10/10/91 19:58:15	8.01	8.06	8.08
10/10/91 20:58:15	7.99	8.03	8.06
10/10/91 21:58:15	8.01	8.01	8.06
10/10/91 22:58:15	7.99	8.01	8.06
10/10/91 23:58:15	8.01	8.03	8.06
10/11/91 00:58:15	8.01	8.03	8.06
10/11/91 01:58:15	8.03	8.06	8.06
10/11/91 02:58:15	8.06	8.06	8.08
10/11/91 03:58:15	8.06	8.06	8.08
10/11/91 04:58:15	8.03	8.06	8.06
10/11/91 05:58:15	8.03	8.06	8.06
10/11/91 06:58:15	8.01	8.03	8.06
10/11/91 07:58:15	7.92	7.97	8.03
10/11/91 08:58:15	7.9	7.94	7.99
10/11/91 09:58:15	7.87	7.94	8.01
10/11/91 10:58:15	7.85	7.94	8.01
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10/11/91 12:58:15	7.92	7.97	8.06
10/11/91 13:58:15	7.92	8.01	8.15
10/11/91 14:58:15	7.97	8.01	8.1
10/11/91 15:58:15	7.97	8.01	8.1
10/11/91 16:58:15	8.01	8.06	8.1
10/11/91 17:58:15	8.03	8.08	8.13
10/11/91 18:58:15	8.03	8.06	8.1
10/11/91 19:58:15	7.99	8.01	8.06
10/11/91 20:58:15	7.97	7.99	8.01
10/11/91 21:58:15	7.94	7.97	7.99
10/11/91 22:58:15	7.94	7.97	7.99
10/11/91 23:58:15	7.94	7.99	8.01
10/12/91 00:58:15	7.92	7.94	7.99
10/12/91 01:58:15	7.97	7.97	7.99
10/12/91 02:58:15	7.97	7.97	7.99
10/12/91 03:58:15	7.94	7.97	7.99
10/12/91 04:58:15	7.97	7.97	7.99
10/12/91 05:58:15	7.92	7.94	7.97
10/12/91 06:58:15	7.9	7.92	7.97
10/12/91 07:58:15	7.78	7.83	7.92
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10/12/91 09:58:15	7.76	7.83	7.9
10/12/91 10:58:15	7.76	7.83	7.87
10/12/91 11:58:15	7.76	7.83	7.92
10/12/91 12:58:15	7.78	7.85	7.97
10/12/91 13:58:15	7.78	7.87	8.01
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10/12/91 15:58:15	7.85	7.9	7.97
10/12/91 16:58:15	7.87	7.9	7.97

10/12/91 18:58:15	7.87	7.92	7.97
10/12/91 19:58:15	7.83	7.87	7.92
10/12/91 20:58:15	7.83	7.85	7.85
10/12/91 21:58:15	7.8	7.83	7.85
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10/12/91 23:58:15	7.78	7.8	7.8
10/13/91 00:58:15	7.78	7.78	7.8
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10/13/91 02:58:15	7.76	7.78	7.8
10/13/91 03:58:15	7.76	7.78	7.8
10/13/91 04:58:15	7.73	7.76	7.78
10/13/91 05:58:15	7.73	7.76	7.78
10/13/91 06:58:15	7.71	7.73	7.78
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10/13/91 08:58:15	7.52	7.57	7.64
10/13/91 09:58:15	7.52	7.57	7.66
10/13/91 10:58:15	7.5	7.57	7.66
10/13/91 11:58:15	7.52	7.57	7.66
10/13/91 12:58:15	7.52	7.59	7.66
10/13/91 13:58:15	7.52	7.59	7.69
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10/13/91 15:58:15	7.59	7.66	7.71
10/13/91 16:58:15	7.62	7.64	7.71
10/13/91 17:58:15	7.64	7.71	7.76
10/13/91 18:58:15	7.64	7.69	7.73
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10/13/91 22:58:15	7.57	7.59	7.62
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10/14/91 01:58:15	7.57	7.59	7.62
10/14/91 02:58:15	7.59	7.62	7.62
10/14/91 03:58:15	7.57	7.62	7.62
10/14/91 04:58:15	7.57	7.59	7.62
10/14/91 05:58:15	7.55	7.57	7.59
10/14/91 06:58:15	7.52	7.55	7.57
10/14/91 07:58:15	7.43	7.48	7.55
10/14/91 08:58:15	7.41	7.45	7.5
10/14/91 09:58:15	7.43	7.48	7.52
10/14/91 10:58:15	7.36	7.45	7.55
10/14/91 11:58:15	7.41	7.48	7.57
10/14/91 12:58:15	7.45	7.52	7.62
10/14/91 13:58:15	7.48	7.57	7.66
10/14/91 14:58:15	7.5	7.59	7.71
10/14/91 15:58:15	7.52	7.62	7.78
10/14/91 16:58:15	7.55	7.62	7.66
10/14/91 17:58:15	7.59	7.62	7.66
10/14/91 18:58:15	7.57	7.62	7.64
10/14/91 19:58:15	7.57	7.59	7.62
10/14/91 20:58:15	7.57	7.59	7.62
10/14/91 21:58:15	7.57	7.57	7.59
10/14/91 22:58:15	7.57	7.57	7.59
10/14/91 23:58:15	7.57	7.59	7.62
10/15/91 00:58:15	7.59	7.62	7.64

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10/15/91	02:58:15	7.59	7.64	7.66
10/15/91	03:58:15	7.62	7.66	7.69
10/15/91	04:58:15	7.64	7.64	7.69
10/15/91	05:58:15	7.62	7.64	7.66
10/15/91	06:58:15	7.57	7.62	7.62
10/15/91	07:58:15	7.48	7.52	7.59
10/15/91	08:58:15	7.45	7.5	7.55
10/15/91	09:58:15	7.43	7.5	7.59
10/15/91	10:58:15	7.43	7.5	7.62
10/15/91	11:58:15	7.41	7.52	7.76
10/15/91	12:58:15	7.45	7.57	7.73
10/15/91	13:58:15	7.43	7.62	7.73
10/15/91	14:58:15	7.55	7.66	7.83
10/15/91	15:58:15	7.52	7.64	7.71
10/15/91	16:58:15	7.62	7.66	7.71
10/15/91	17:58:15	7.64	7.66	7.71
10/15/91	18:58:15	7.62	7.66	7.73
10/15/91	19:58:15	7.59	7.62	7.66
10/15/91	20:58:15	7.59	7.62	7.64
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10/16/91	02:58:15	7.64	7.66	7.71
10/16/91	03:58:15	7.69	7.69	7.71
10/16/91	04:58:15	7.66	7.69	7.71
10/16/91	05:58:15	7.66	7.69	7.71
10/16/91	06:58:15	7.62	7.66	7.69
10/16/91	07:58:15	7.55	7.59	7.66
10/16/91	08:58:15	7.55	7.57	7.66
10/16/91	09:58:15	7.5	7.57	7.64
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10/16/91	11:58:15	7.5	7.62	7.73
10/16/91	12:58:15	7.52	7.62	7.8
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10/16/91	16:58:15	7.64	7.69	7.76
10/16/91	17:58:15	7.66	7.71	7.76
10/16/91	18:58:15	7.62	7.66	7.71
10/16/91	19:58:15	7.59	7.62	7.64
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10/17/91	02:58:15	7.57	7.59	7.64
10/17/91	03:58:15	7.57	7.59	7.62
10/17/91	04:58:15	7.57	7.59	7.62
10/17/91	05:58:15	7.55	7.59	7.62
10/17/91	06:58:15	7.5	7.57	7.62
10/17/91	07:58:15	7.43	7.48	7.55
10/17/91	08:58:15	7.43	7.45	7.52

10/17/91	10:58:15	7.41	7.5	7.57
10/17/91	11:58:15	7.41	7.48	7.55
10/17/91	12:58:15	7.43	7.5	7.62
10/17/91	13:58:15	7.48	7.52	7.64
10/17/91	14:58:15	7.5	7.55	7.62
10/17/91	15:58:15	7.52	7.57	7.62
10/17/91	16:58:15	7.55	7.59	7.66
10/17/91	17:58:15	7.62	7.64	7.69
10/17/91	18:58:15	7.55	7.59	7.64
10/17/91	19:58:15	7.55	7.57	7.62
10/17/91	20:58:15	7.52	7.57	7.59
10/17/91	21:58:15	7.52	7.55	7.57
10/17/91	22:58:15	7.52	7.52	7.55
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10/18/91	05:58:15	7.52	7.55	7.57
10/18/91	06:58:15	7.43	7.52	7.55
10/18/91	07:58:15	7.38	7.43	7.45
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10/18/91	09:58:15	7.34	7.41	7.45
10/18/91	10:58:15	7.36	7.43	7.5
10/18/91	11:58:15	7.36	7.43	7.5
10/18/91	12:58:15	7.41	7.45	7.52
10/18/91	13:58:15	7.43	7.5	7.64
10/18/91	14:58:15	7.45	7.52	7.62
10/18/91	15:58:15	7.5	7.55	7.64
10/18/91	16:58:15	7.55	7.59	7.66
10/18/91	17:58:15	7.01	7.66	7.8
10/18/91	18:58:15	7.59	7.62	7.69
10/18/91	19:58:15	7.57	7.59	7.64
10/18/91	20:58:15	7.55	7.57	7.62
10/18/91	21:58:15	7.55	7.57	7.59
10/18/91	22:58:15	7.55	7.57	7.59
10/18/91	23:58:15	7.57	7.59	7.62
10/19/91	00:58:15	7.59	7.62	7.64
10/19/91	01:58:15	7.59	7.62	7.64
10/19/91	02:58:15	7.62	7.62	7.64
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10/19/91	04:58:15	7.62	7.62	7.64
10/19/91	05:58:15	7.62	7.64	7.64
10/19/91	06:58:15	7.57	7.62	7.64
10/19/91	07:58:15	7.48	7.52	7.59
10/19/91	08:58:15	7.48	7.5	7.55
10/19/91	09:58:15	7.45	7.52	7.59
10/19/91	10:58:15	7.45	7.52	7.59
10/19/91	11:58:15	7.45	7.55	7.59
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10/19/91	13:58:15	7.55	7.62	7.69
10/19/91	14:58:15	7.59	7.64	7.71
10/19/91	15:58:15	7.62	7.64	7.73
10/19/91	16:58:15	7.64	7.69	7.76

10/19/91 18:58:15	7.69	7.71	7.76
10/19/91 19:58:15	7.64	7.69	7.73
10/19/91 20:58:15	7.64	7.66	7.69
10/19/91 21:58:15	7.64	7.64	7.69
10/19/91 22:58:15	7.62	7.64	7.66
10/19/91 23:58:15	7.64	7.64	7.66
10/20/91 00:58:15	7.64	7.66	7.66
10/20/91 01:58:15	7.64	7.66	7.69
10/20/91 02:58:15	7.64	7.66	7.69
10/20/91 03:58:15	7.64	7.69	7.69
10/20/91 04:58:15	7.66	7.69	7.69
10/20/91 05:58:15	7.64	7.69	7.69
10/20/91 06:58:15	7.57	7.64	7.69
10/20/91 07:58:15	7.5	7.55	7.57
10/20/91 08:58:15	7.48	7.5	7.55
10/20/91 09:58:15	7.45	7.52	7.59
10/20/91 10:58:15	7.43	7.5	7.57
10/20/91 11:58:15	7.41	7.5	7.59
10/20/91 12:58:15	7.45	7.5	7.57
10/20/91 13:58:15	7.43	7.55	7.69
10/20/91 14:58:15	7.48	7.55	7.62
10/20/91 15:58:15	7.52	7.57	7.64
10/20/91 16:58:15	7.52	7.57	7.62
10/20/91 17:58:15	7.52	7.57	7.62
10/20/91 18:58:15	7.5	7.52	7.59
10/20/91 19:58:15	7.45	7.5	7.55
10/20/91 20:58:15	7.48	7.48	7.5
10/20/91 21:58:15	7.45	7.5	7.52
10/20/91 22:58:15	7.45	7.45	7.5
10/20/91 23:58:15	7.45	7.45	7.5
10/21/91 00:58:15	7.45	7.48	7.5
10/21/91 01:58:15	7.45	7.48	7.5
10/21/91 02:58:15	7.45	7.48	7.5
10/21/91 03:58:15	7.48	7.48	7.5
10/21/91 04:58:15	7.48	7.48	7.5
10/21/91 05:58:15	7.45	7.48	7.52
10/21/91 06:58:15	7.45	7.48	7.5
10/21/91 07:58:15	7.41	7.45	7.48
10/21/91 08:58:15	7.36	7.41	7.45
10/21/91 09:58:15	7.36	7.38	7.43
10/21/91 10:58:15	7.34	7.36	7.41
10/21/91 11:58:15	7.36	7.38	7.43
10/21/91 12:58:15	7.36	7.38	7.41
10/21/91 13:58:15	7.36	7.41	7.43
10/21/91 14:58:15	7.36	7.41	7.48
10/21/91 15:58:15	7.34	7.43	7.5
10/21/91 16:58:15	7.43	7.45	7.5
10/21/91 17:58:15	7.41	7.43	7.48
10/21/91 18:58:15	7.41	7.41	7.45
10/21/91 19:58:15	7.38	7.43	7.45
10/21/91 20:58:15	7.41	7.43	7.45
10/21/91 21:58:15	7.36	7.38	7.45
10/21/91 22:58:15	7.36	7.41	7.45
10/21/91 23:58:15	7.38	7.41	7.43
10/22/91 00:58:15	7.36	7.38	7.43

10/22/91 02:58:15	7.38	7.41	7.45
10/22/91 03:58:15	7.41	7.43	7.45
10/22/91 04:58:15	7.38	7.41	7.43
10/22/91 05:58:15	7.36	7.41	7.41
10/22/91 06:58:15	7.34	7.36	7.38
10/22/91 07:58:15	7.27	7.31	7.36
10/22/91 08:58:15	7.22	7.29	7.34
08/21/91 07:31:06	9.4	9.45	9.5
08/21/91 08:31:06	9.38	9.45	9.57

WMW 2-4

WMW2-4	Time	Min	Mean	Max
10/22/91	11:41:06	6.46	7.27	7.36
10/22/91	12:41:06	7.11	7.31	7.45
10/22/91	13:41:06	7.25	7.38	7.55
10/22/91	14:41:06	7.2	7.34	7.52
10/22/91	15:41:06	7.25	7.38	7.52
10/22/91	16:41:06	7.31	7.38	7.45
10/22/91	17:41:06	7.36	7.38	7.43
10/22/91	18:41:06	7.36	7.36	7.43
10/22/91	19:41:06	7.34	7.36	7.41
10/22/91	20:41:06	7.31	7.36	7.41
10/22/91	21:41:06	7.31	7.36	7.38
10/22/91	22:41:06	7.31	7.34	7.38
10/22/91	23:41:06	7.31	7.34	7.34
10/23/91	00:41:06	7.31	7.34	7.36
10/23/91	01:41:06	7.31	7.34	7.36
10/23/91	02:41:06	7.31	7.34	7.34
10/23/91	03:41:06	7.31	7.36	7.36
10/23/91	04:41:06	7.34	7.34	7.36
10/23/91	05:41:06	7.34	7.34	7.36
10/23/91	06:41:06	7.29	7.31	7.34
10/23/91	07:41:06	7.25	7.29	7.31
10/23/91	08:41:06	7.18	7.22	7.27
10/23/91	09:41:06	7.15	7.2	7.27
10/23/91	10:41:06	7.15	7.22	7.36
10/23/91	11:41:06	7.06	7.29	7.41
10/23/91	12:41:06	7.08	7.25	7.36
10/23/91	13:41:06	7.13	7.27	7.43
10/23/91	14:41:06	7.18	7.27	7.48
10/23/91	15:41:06	7.27	7.29	7.36
10/23/91	16:41:06	7.27	7.31	7.38
10/23/91	17:41:06	7.27	7.31	7.36
10/23/91	18:41:06	7.29	7.31	7.36
10/23/91	19:41:06	7.27	7.29	7.34
10/23/91	20:41:06	7.27	7.29	7.31
10/23/91	21:41:06	7.25	7.29	7.31
10/23/91	22:41:06	7.25	7.27	7.31
10/23/91	23:41:06	7.22	7.27	7.31
10/24/91	00:41:06	7.25	7.27	7.31
10/24/91	01:41:06	7.25	7.27	7.31
10/24/91	02:41:06	7.25	7.29	7.31
10/24/91	03:41:06	7.27	7.29	7.31
10/24/91	04:41:06	7.27	7.29	7.31
10/24/91	05:41:06	7.25	7.27	7.31
10/24/91	06:41:06	7.22	7.25	7.29
10/24/91	07:41:06	7.18	7.22	7.25
10/24/91	08:41:06	7.11	7.15	7.22
10/24/91	09:41:06	7.08	7.13	7.2
10/24/91	10:41:06	7.08	7.18	7.27
10/24/91	11:41:06	7.06	7.18	7.27
10/24/91	12:41:06	7.06	7.18	7.29

10/24/91 17:41:06	7.22	7.25	7.27
10/24/91 18:41:06	7.22	7.25	7.29
10/24/91 19:41:06	7.22	7.22	7.27
10/24/91 20:41:06	7.2	7.22	7.25
10/24/91 21:41:06	7.22	7.22	7.25
10/24/91 22:41:06	7.22	7.22	7.25
10/24/91 23:41:06	7.22	7.25	7.25
10/25/91 00:41:06	7.22	7.25	7.25
10/25/91 01:41:06	7.22	7.25	7.25
10/25/91 02:41:06	7.22	7.25	7.27
10/25/91 03:41:06	7.22	7.25	7.27
10/25/91 04:41:06	7.22	7.27	7.27
10/25/91 05:41:06	7.2	7.22	7.27
10/25/91 06:41:06	7.2	7.25	7.27
10/25/91 07:41:06	7.15	7.2	7.25
10/25/91 08:41:06	7.13	7.15	7.2
10/25/91 09:41:06	7.08	7.13	7.2
10/25/91 10:41:06	6.97	7.11	7.18
10/25/91 11:41:06	7.01	7.11	7.22
10/25/91 12:41:06	7.04	7.13	7.27
10/25/91 13:41:06	7.01	7.13	7.25
10/25/91 14:41:06	7.13	7.2	7.27
10/25/91 15:41:06	7.06	7.18	7.31
10/25/91 16:41:06	7.11	7.2	7.27
10/25/91 17:41:06	7.18	7.22	7.27
10/25/91 18:41:06	7.18	7.2	7.25
10/25/91 19:41:06	7.15	7.18	7.2
10/25/91 20:41:06	7.15	7.18	7.2
10/25/91 21:41:06	7.15	7.18	7.2
10/25/91 22:41:06	7.13	7.15	7.2
10/25/91 23:41:06	7.15	7.15	7.18
10/26/91 00:41:06	7.15	7.18	7.18
10/26/91 01:41:06	7.15	7.18	7.18
10/26/91 02:41:06	7.15	7.18	7.2
10/26/91 03:41:06	7.18	7.18	7.2
10/26/91 04:41:06	7.18	7.18	7.2
10/26/91 05:41:06	7.18	7.18	7.2
10/26/91 06:41:06	7.15	7.18	7.2
10/26/91 07:41:06	7.13	7.18	7.22
10/26/91 08:41:06	7.04	7.11	7.18
10/26/91 09:41:06	7.01	7.08	7.22
10/26/91 10:41:06	6.97	7.11	7.22
10/26/91 11:41:06	6.9	7.11	7.22
10/26/91 12:41:06	6.92	7.13	7.27
10/26/91 13:41:06	6.99	7.13	7.25
10/26/91 14:41:06	7.04	7.13	7.2
10/26/91 15:41:06	7.08	7.18	7.27
10/26/91 16:41:06	7.08	7.15	7.2
10/26/91 17:41:06	7.13	7.18	7.25
10/26/91 18:41:06	7.13	7.15	7.18
10/26/91 19:41:06	7.13	7.18	7.18
10/26/91 20:41:06	7.11	7.13	7.18

10/27/91 01:41:06	7.11	7.13	7.13
10/27/91 02:41:06	7.11	7.13	7.15
10/27/91 03:41:06	7.11	7.13	7.15
10/27/91 04:41:06	7.11	7.13	7.13
10/27/91 05:41:06	7.11	7.13	7.13
10/27/91 06:41:06	7.08	7.13	7.15
10/27/91 07:41:06	7.08	7.13	7.13
10/27/91 08:41:06	6.99	7.06	7.13
10/27/91 09:41:06	6.85	6.99	7.08
10/27/91 10:41:06	6.94	7.01	7.2
10/27/91 11:41:06	6.8	7.06	7.22
10/27/91 12:41:06	6.9	7.04	7.29
10/27/91 13:41:06	6.9	7.06	7.29
10/27/91 14:41:06	6.97	7.11	7.29
10/27/91 15:41:06	6.99	7.11	7.25
10/27/91 16:41:06	7.04	7.11	7.22
10/27/91 17:41:06	7.11	7.15	7.18
10/27/91 18:41:06	7.11	7.13	7.18

10/27/91 19:41:06	7.08	7.11	7.15
10/27/91 20:41:06	7.08	7.08	7.13
10/27/91 21:41:06	7.06	7.08	7.11
10/27/91 22:41:06	7.08	7.11	7.11
10/27/91 23:41:06	7.06	7.11	7.11
10/28/91 00:41:06	7.06	7.08	7.13
10/28/91 01:41:06	7.08	7.13	7.13
10/28/91 02:41:06	7.08	7.08	7.11
10/28/91 03:41:06	7.08	7.13	7.13
10/28/91 04:41:06	7.06	7.08	7.11
10/28/91 05:41:06	7.06	7.06	7.08
10/28/91 06:41:06	7.04	7.06	7.08
10/28/91 07:41:06	6.92	6.97	7.04
10/28/91 08:41:06	6.87	6.92	6.97
10/28/91 09:41:06	6.85	6.92	6.99
10/28/91 10:41:06	6.8	6.92	6.97
10/28/91 11:41:06	6.83	6.92	6.99
10/28/91 12:41:06	6.85	6.94	7.15
10/28/91 13:41:06	6.83	6.97	7.15
10/28/91 14:41:06	6.83	6.97	7.15
10/28/91 15:41:06	6.9	6.97	7.08
10/28/91 16:41:06	6.92	6.99	7.06
10/28/91 17:41:06	6.99	7.01	7.06
10/28/91 18:41:06	6.94	6.99	7.04
10/28/91 19:41:06	6.92	6.94	6.99
10/28/91 20:41:06	6.92	6.94	6.97
10/28/91 21:41:06	6.9	6.94	6.94
10/28/91 22:41:06	6.87	6.9	6.94
10/28/91 23:41:06	6.87	6.92	6.94
10/29/91 00:41:06	6.87	6.9	6.92
10/29/91 01:41:06	6.85	6.87	6.92
10/29/91 02:41:06	6.83	6.87	6.9
10/29/91 03:41:06	6.85	6.87	6.9
10/29/91 04:41:06	6.83	6.85	6.9

10/29/91 09:41:06	6.6	6.69	6.76
10/29/91 10:41:06	6.6	6.66	6.76
10/29/91 11:41:06	6.62	6.69	6.8
10/29/91 12:41:06	6.62	6.71	6.78
10/29/91 13:41:06	6.6	6.76	6.87
10/29/91 14:41:06	6.64	6.76	6.83
10/29/91 15:41:06	6.69	6.76	6.8
10/29/91 16:41:06	6.73	6.8	6.85
10/29/91 17:41:06	6.76	6.78	6.83
10/29/91 18:41:06	6.73	6.76	6.78
10/29/91 19:41:06	6.73	6.76	6.76
10/29/91 20:41:06	6.73	6.73	6.76
10/29/91 21:41:06	6.71	6.73	6.76
10/29/91 22:41:06	6.71	6.76	6.78
10/29/91 23:41:06	6.71	6.73	6.8
10/30/91 00:41:06	6.76	6.76	6.78
10/30/91 01:41:06	6.73	6.76	6.8
10/30/91 02:41:06	6.73	6.78	6.8

10/30/91 03:41:06	6.76	6.76	6.8
10/30/91 04:41:06	6.76	6.76	6.8
10/30/91 05:41:06	6.73	6.78	6.8
10/30/91 06:41:06	6.73	6.76	6.78
10/30/91 07:41:06	6.66	6.71	6.78
10/30/91 08:41:06	6.62	6.69	6.73
10/30/91 09:41:06	6.64	6.69	6.76
10/30/91 10:41:06	6.62	6.69	6.76
10/30/91 11:41:06	6.62	6.69	6.8
10/30/91 12:41:06	6.64	6.73	6.83
10/30/91 13:41:06	6.73	6.78	6.85
10/30/91 14:41:06	6.76	6.8	6.87
10/30/91 15:41:06	6.78	6.83	6.9
10/30/91 16:41:06	6.8	6.87	6.94
10/30/91 17:41:06	6.9	6.92	6.99
10/30/91 18:41:06	6.87	6.9	6.92
10/30/91 19:41:06	6.85	6.87	6.92
10/30/91 20:41:06	6.85	6.87	6.9
10/30/91 21:41:06	6.83	6.85	6.87
10/30/91 22:41:06	6.83	6.85	6.9
10/30/91 23:41:06	6.85	6.9	6.92
10/31/91 00:41:06	6.87	6.9	6.92
10/31/91 01:41:06	6.87	6.9	6.92
10/31/91 02:41:06	6.9	6.92	6.94
10/31/91 03:41:06	6.9	6.92	6.97
10/31/91 04:41:06	6.9	6.92	6.94
10/31/91 05:41:06	6.9	6.92	6.94
10/31/91 06:41:06	6.87	6.9	6.94
10/31/91 07:41:06	6.76	6.83	6.9
10/31/91 08:41:06	6.71	6.8	6.92
10/31/91 09:41:06	6.6	6.78	6.85
10/31/91 10:41:06	6.62	6.78	6.9
10/31/91 11:41:06	6.73	6.8	6.9
10/31/91 12:41:06	6.66	6.8	6.94

10/31/91 17:41:06	6.9	6.92	6.97
10/31/91 18:41:06	6.85	6.9	6.94
10/31/91 19:41:06	6.83	6.85	6.9
10/31/91 20:41:06	6.83	6.85	6.87
10/31/91 21:41:06	6.8	6.83	6.85
10/31/91 22:41:06	6.8	6.85	6.85
10/31/91 23:41:06	6.83	6.85	6.85
11/01/91 00:41:06	6.8	6.85	6.85
11/01/91 01:41:06	6.78	6.83	6.85
11/01/91 02:41:06	6.78	6.83	6.85
11/01/91 03:41:06	6.78	6.8	6.83
11/01/91 04:41:06	6.78	6.8	6.8
11/01/91 05:41:06	6.78	6.78	6.8
11/01/91 06:41:06	6.76	6.78	6.8
11/01/91 07:41:06	6.66	6.71	6.78
11/01/91 08:41:06	6.69	6.71	6.73
11/01/91 09:41:06	6.64	6.69	6.73
11/01/91 10:41:06	6.57	6.64	6.71

11/01/91 11:41:06	6.57	6.69	6.78
11/01/91 12:41:06	6.62	6.71	6.78
11/01/91 13:41:06	6.66	6.73	6.78
11/01/91 14:41:06	6.71	6.73	6.78
11/01/91 15:41:06	6.73	6.76	6.8
11/01/91 16:41:06	6.73	6.78	6.8
11/01/91 17:41:06	6.76	6.78	6.8
11/01/91 18:41:06	6.76	6.78	6.8
11/01/91 19:41:06	6.71	6.76	6.8
11/01/91 20:41:06	6.71	6.73	6.76
11/01/91 21:41:06	6.69	6.71	6.73
11/01/91 22:41:06	6.69	6.71	6.73
11/01/91 23:41:06	6.66	6.71	6.73
11/02/91 00:41:06	6.69	6.71	6.73
11/02/91 01:41:06	6.69	6.69	6.73
11/02/91 02:41:06	6.69	6.73	6.73
11/02/91 03:41:06	6.69	6.71	6.71
11/02/91 04:41:06	6.66	6.71	6.73
11/02/91 05:41:06	6.64	6.69	6.73
11/02/91 06:41:06	6.62	6.66	6.71
11/02/91 07:41:06	6.5	6.57	6.66
11/02/91 08:41:06	6.48	6.53	6.6
11/02/91 09:41:06	6.41	6.5	6.6
11/02/91 10:41:06	6.41	6.5	6.57
11/02/91 11:41:06	6.41	6.5	6.62
11/02/91 12:41:06	6.43	6.5	6.62
11/02/91 13:41:06	6.46	6.53	6.64
11/02/91 14:41:06	6.46	6.53	6.6
11/02/91 15:41:06	6.5	6.55	6.64
11/02/91 16:41:06	6.48	6.57	6.64
11/02/91 17:41:06	6.55	6.57	6.62
11/02/91 18:41:06	6.5	6.53	6.6
11/02/91 19:41:06	6.48	6.5	6.55
11/02/91 20:41:06	6.48	6.48	6.5

11/03/91 01:41:06	6.43	6.46	6.48
11/03/91 02:41:06	6.43	6.46	6.5
11/03/91 03:41:06	6.43	6.46	6.48
11/03/91 04:41:06	6.43	6.46	6.48
11/03/91 05:41:06	6.41	6.43	6.46
11/03/91 06:41:06	6.39	6.41	6.43
11/03/91 07:41:06	6.39	6.41	6.43
11/03/91 08:41:06	6.34	6.39	6.41
11/03/91 09:41:06	6.25	6.34	6.41
11/03/91 10:41:06	6.27	6.34	6.41
11/03/91 11:41:06	6.32	6.36	6.39
11/03/91 12:41:06	6.32	6.36	6.41
11/03/91 13:41:06	6.27	6.34	6.41
11/03/91 14:41:06	6.27	6.36	6.43
11/03/91 15:41:06	6.29	6.41	6.48
11/03/91 16:41:06	6.39	6.41	6.43
11/03/91 17:41:06	6.39	6.41	6.46
11/03/91 18:41:06	6.36	6.41	6.46

11/03/91 19:41:06	6.34	6.39	6.43
11/03/91 20:41:06	6.34	6.36	6.41
11/03/91 21:41:06	6.34	6.34	6.39
11/03/91 22:41:06	6.34	6.36	6.39
11/03/91 23:41:06	6.36	6.36	6.39
11/04/91 00:41:06	6.34	6.36	6.39
11/04/91 01:41:06	6.36	6.39	6.41
11/04/91 02:41:06	6.36	6.39	6.43
11/04/91 03:41:06	6.36	6.39	6.41
11/04/91 04:41:06	6.39	6.39	6.41
11/04/91 05:41:06	6.39	6.39	6.41
11/04/91 06:41:06	6.34	6.36	6.39
11/04/91 07:41:06	6.29	6.34	6.39
11/04/91 08:41:06	6.2	6.25	6.32
11/04/91 09:41:06	6.22	6.29	6.36
11/04/91 10:41:06	6.25	6.29	6.39
11/04/91 11:41:06	6.25	6.32	6.41
11/04/91 12:41:06	6.2	6.32	6.41
11/04/91 13:41:06	6.27	6.34	6.41
11/04/91 14:41:06	6.34	6.39	6.46
11/04/91 15:41:06	6.34	6.39	6.48
11/04/91 16:41:06	6.39	6.43	6.48
11/04/91 17:41:06	6.43	6.46	6.48
11/04/91 18:41:06	6.39	6.41	6.48
11/04/91 19:41:06	6.39	6.41	6.43
11/04/91 20:41:06	6.36	6.39	6.43
11/04/91 21:41:06	6.34	6.36	6.39
11/04/91 22:41:06	6.34	6.36	6.39
11/04/91 23:41:06	6.36	6.39	6.39
11/05/91 00:41:06	6.32	6.36	6.39
11/05/91 01:41:06	6.34	6.36	6.41
11/05/91 02:41:06	6.34	6.39	6.41
11/05/91 03:41:06	6.34	6.39	6.39
11/05/91 04:41:06	6.36	6.39	6.39

11/05/91 09:41:06	6.18	6.25	6.32
11/05/91 10:41:06	6.13	6.2	6.27
11/05/91 11:41:06	6.18	6.25	6.32
11/05/91 12:41:06	6.2	6.27	6.39
11/05/91 13:41:06	6.25	6.32	6.41
11/05/91 14:41:06	6.29	6.36	6.43
11/05/91 15:41:06	6.34	6.39	6.41
11/05/91 16:41:06	6.36	6.41	6.48
11/05/91 17:41:06	6.41	6.43	6.48
11/05/91 18:41:06	6.39	6.41	6.46
11/05/91 19:41:06	6.34	6.39	6.41
11/05/91 20:41:06	6.29	6.34	6.39
11/05/91 21:41:06	6.27	6.32	6.36
11/05/91 22:41:06	6.32	6.34	6.36
11/05/91 23:41:06	6.32	6.34	6.36
11/06/91 00:41:06	6.29	6.32	6.34
11/06/91 01:41:06	6.29	6.32	6.34
11/06/91 02:41:06	6.32	6.34	6.36

11/06/91 03:41:06	6.34	6.36	6.41
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11/16/91 17:41:06	6.39	6.41	6.43
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11/16/91 20:41:06	6.34	6.39	6.39

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11/19/91 03:41:06	6.15	6.15	6.2
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11/21/91 05:41:06	6.15	6.2	6.22
11/21/91 06:41:06	6.13	6.15	6.2
11/21/91 07:41:06	6.13	6.18	6.18
11/21/91 08:41:06	6.04	6.11	6.15
11/21/91 09:41:06	5.94	6.08	6.15
11/21/91 10:41:06	5.97	6.04	6.15
10/19/91 23:58:15	7.64	7.64	7.66
10/20/91 00:58:15	7.64	7.66	7.66

10/20/91 05:58:15	7.64	7.69	7.69
10/20/91 06:58:15	7.57	7.64	7.69
10/20/91 07:58:15	7.5	7.55	7.57
10/20/91 08:58:15	7.48	7.5	7.55
10/20/91 09:58:15	7.45	7.52	7.59
10/20/91 10:58:15	7.43	7.5	7.57
10/20/91 11:58:15	7.41	7.5	7.59
10/20/91 12:58:15	7.45	7.5	7.57
10/20/91 13:58:15	7.43	7.55	7.69
10/20/91 14:58:15	7.48	7.55	7.62
10/20/91 15:58:15	7.52	7.57	7.64
10/20/91 16:58:15	7.52	7.57	7.62
10/20/91 17:58:15	7.52	7.57	7.62
10/20/91 18:58:15	7.5	7.52	7.59
10/20/91 19:58:15	7.45	7.5	7.55
10/20/91 20:58:15	7.48	7.48	7.5
10/20/91 21:58:15	7.45	7.5	7.52
10/20/91 22:58:15	7.45	7.45	7.5

10/20/91 23:58:15	7.45	7.45	7.5
10/21/91 00:58:15	7.45	7.48	7.5
10/21/91 01:58:15	7.45	7.48	7.5
10/21/91 02:58:15	7.45	7.48	7.5
10/21/91 03:58:15	7.48	7.48	7.5
10/21/91 04:58:15	7.48	7.48	7.5
10/21/91 05:58:15	7.45	7.48	7.52
10/21/91 06:58:15	7.45	7.48	7.5
10/21/91 07:58:15	7.41	7.45	7.48
10/21/91 08:58:15	7.36	7.41	7.45
10/21/91 09:58:15	7.36	7.38	7.43
10/21/91 10:58:15	7.34	7.36	7.41
10/21/91 11:58:15	7.36	7.38	7.43
10/21/91 12:58:15	7.36	7.38	7.41
10/21/91 13:58:15	7.36	7.41	7.43
10/21/91 14:58:15	7.36	7.41	7.48
10/21/91 15:58:15	7.34	7.43	7.5
10/21/91 16:58:15	7.43	7.45	7.5
10/21/91 17:58:15	7.41	7.43	7.48
10/21/91 18:58:15	7.41	7.41	7.45
10/21/91 19:58:15	7.38	7.43	7.45
10/21/91 20:58:15	7.41	7.43	7.45
10/21/91 21:58:15	7.36	7.38	7.45
10/21/91 22:58:15	7.36	7.41	7.45
10/21/91 23:58:15	7.38	7.41	7.43
10/22/91 00:58:15	7.36	7.38	7.43
10/22/91 01:58:15	7.36	7.38	7.43
10/22/91 02:58:15	7.38	7.41	7.45
10/22/91 03:58:15	7.41	7.43	7.45
10/22/91 04:58:15	7.38	7.41	7.43
10/22/91 05:58:15	7.36	7.41	7.41
10/22/91 06:58:15	7.34	7.36	7.38
10/22/91 07:58:15	7.27	7.31	7.36
10/22/91 08:58:15	7.22	7.29	7.34

WMW 2-5

WMW2-5	Time	Min	Mean	Max
11/21/91	12:07:10	6.01	6.11	6.27
11/21/91	13:07:10	6.04	6.18	6.34
11/21/91	14:07:10	6.04	6.18	6.25
11/21/91	15:07:10	6.11	6.2	6.29
11/21/91	16:07:10	6.15	6.25	6.32
11/21/91	17:07:10	6.18	6.22	6.27
11/21/91	18:07:10	6.2	6.22	6.27
11/21/91	19:07:10	6.2	6.2	6.25
11/21/91	20:07:10	6.15	6.18	6.2
11/21/91	21:07:10	6.15	6.18	6.2
11/21/91	22:07:10	6.15	6.18	6.2
11/21/91	23:07:10	6.15	6.18	6.2
11/22/91	00:07:10	6.15	6.18	6.2
11/22/91	01:07:10	6.18	6.2	6.25
11/22/91	02:07:10	6.18	6.2	6.25
11/22/91	03:07:10	6.2	6.22	6.25
11/22/91	04:07:10	6.18	6.2	6.25
11/22/91	05:07:10	6.2	6.2	6.22
11/22/91	06:07:10	6.18	6.2	6.25
11/22/91	07:07:10	6.15	6.22	6.22
11/22/91	08:07:10	6.15	6.15	6.2
11/22/91	09:07:10	6.11	6.13	6.15
11/22/91	10:07:10	6.11	6.13	6.15
11/22/91	11:07:10	5.99	6.06	6.13
11/22/91	12:07:10	6.04	6.08	6.15
11/22/91	13:07:10	6.04	6.08	6.13
11/22/91	14:07:10	6.06	6.13	6.18
11/22/91	15:07:10	6.04	6.11	6.2
11/22/91	16:07:10	6.01	6.13	6.18
11/22/91	17:07:10	6.11	6.15	6.2
11/22/91	18:07:10	6.13	6.15	6.18
11/22/91	19:07:10	6.11	6.13	6.18
11/22/91	20:07:10	6.08	6.11	6.13
11/22/91	21:07:10	6.06	6.08	6.13
11/22/91	22:07:10	6.04	6.06	6.11
11/22/91	23:07:10	6.04	6.08	6.13
11/23/91	00:07:10	6.06	6.08	6.13
11/23/91	01:07:10	6.06	6.06	6.11
11/23/91	02:07:10	6.06	6.06	6.08
11/23/91	03:07:10	6.06	6.06	6.11
11/23/91	04:07:10	6.06	6.11	6.11
11/23/91	05:07:10	6.06	6.08	6.11
11/23/91	06:07:10	6.04	6.08	6.11
11/23/91	07:07:10	6.01	6.06	6.11
11/23/91	08:07:10	5.99	6.04	6.06
11/23/91	09:07:10	5.97	6.01	6.04
11/23/91	10:07:10	5.85	5.97	6.01
11/23/91	11:07:10	5.94	5.99	6.04
11/23/91	12:07:10	5.94	5.99	6.06
11/23/91	13:07:10	5.97	6.04	6.08

11/23/91 18:07:10	6.08	6.13	6.18
11/23/91 19:07:10	6.06	6.08	6.13
11/23/91 20:07:10	6.04	6.06	6.08
11/23/91 21:07:10	6.04	6.06	6.11
11/23/91 22:07:10	6.04	6.06	6.08
11/23/91 23:07:10	6.04	6.06	6.11
11/24/91 00:07:10	6.06	6.08	6.11
11/24/91 01:07:10	6.06	6.08	6.13
11/24/91 02:07:10	6.11	6.11	6.11
11/24/91 03:07:10	6.06	6.08	6.11
11/24/91 04:07:10	6.08	6.11	6.11
11/24/91 05:07:10	6.04	6.08	6.11
11/24/91 06:07:10	6.04	6.06	6.11
11/24/91 07:07:10	5.99	6.04	6.06
11/24/91 08:07:10	5.92	5.97	6.01
11/24/91 09:07:10	5.83	5.94	6.04
11/24/91 10:07:10	5.85	5.92	5.99
11/24/91 11:07:10	5.76	5.88	5.97
11/24/91 12:07:10	5.83	5.9	6.06
11/24/91 13:07:10	5.83	5.92	6.04
11/24/91 14:07:10	5.88	5.94	6.01
11/24/91 15:07:10	5.92	5.97	6.04
11/24/91 16:07:10	5.92	5.99	6.06
11/24/91 17:07:10	5.97	5.99	6.04
11/24/91 18:07:10	5.94	5.97	6.01
11/24/91 19:07:10	5.92	5.94	5.99
11/24/91 20:07:10	5.88	5.92	5.97
11/24/91 21:07:10	5.88	5.9	5.94
11/24/91 22:07:10	5.85	5.88	5.9
11/24/91 23:07:10	5.83	5.88	5.88
11/25/91 00:07:10	5.83	5.88	5.9
11/25/91 01:07:10	5.85	5.9	5.92
11/25/91 02:07:10	5.85	5.88	5.9
11/25/91 03:07:10	5.85	5.88	5.88
11/25/91 04:07:10	5.85	5.88	5.92
11/25/91 05:07:10	5.85	5.88	5.92
11/25/91 06:07:10	5.85	5.88	5.9
11/25/91 07:07:10	5.81	5.83	5.88
11/25/91 08:07:10	5.69	5.74	5.85
11/25/91 09:07:10	5.69	5.71	5.78
11/25/91 10:07:10	5.69	5.74	5.81
11/25/91 11:07:10	5.67	5.76	5.83
11/25/91 12:07:10	5.71	5.78	5.85
11/25/91 13:07:10	5.76	5.83	5.9
11/25/91 14:07:10	5.78	5.85	5.97
11/25/91 15:07:10	5.83	5.88	5.94
11/25/91 16:07:10	5.83	5.9	5.97
11/25/91 17:07:10	5.9	5.94	5.97
11/25/91 18:07:10	5.9	5.92	5.94
11/25/91 19:07:10	5.88	5.9	5.92
11/25/91 20:07:10	5.85	5.88	5.9
11/25/91 21:07:10	5.85	5.88	5.9

11/26/91 02:07:10	5.78	5.83	5.85
11/26/91 03:07:10	5.81	5.83	5.85
11/26/91 04:07:10	5.81	5.83	5.85
11/26/91 05:07:10	5.83	5.85	5.88

11/26/91 06:07:10	5.78	5.81	5.88
11/26/91 07:07:10	5.74	5.78	5.83
11/26/91 08:07:10	5.64	5.69	5.78
11/26/91 09:07:10	5.64	5.69	5.76
11/26/91 10:07:10	5.64	5.69	5.74
11/26/91 11:07:10	5.62	5.67	5.74
11/26/91 12:07:10	5.64	5.69	5.78
11/26/91 13:07:10	5.64	5.74	5.83
11/26/91 14:07:10	5.67	5.76	5.85
11/26/91 15:07:10	5.74	5.78	5.83
11/26/91 16:07:10	5.74	5.78	5.88
11/26/91 17:07:10	5.78	5.81	5.85
11/26/91 18:07:10	5.76	5.78	5.83
11/26/91 19:07:10	5.74	5.76	5.81
11/26/91 20:07:10	5.71	5.74	5.76
11/26/91 21:07:10	5.69	5.74	5.74
11/26/91 22:07:10	5.69	5.74	5.74
11/26/91 23:07:10	5.69	5.71	5.74
11/27/91 00:07:10	5.69	5.71	5.74
11/27/91 01:07:10	5.71	5.74	5.76
11/27/91 02:07:10	5.69	5.71	5.76
11/27/91 03:07:10	5.71	5.71	5.74
11/27/91 04:07:10	5.69	5.71	5.74
11/27/91 05:07:10	5.71	5.74	5.76
11/27/91 06:07:10	5.69	5.74	5.76
11/27/91 07:07:10	5.64	5.69	5.74
11/27/91 08:07:10	5.6	5.67	5.74
11/27/91 09:07:10	5.5	5.62	5.74
11/27/91 10:07:10	5.53	5.62	5.69
11/27/91 11:07:10	5.53	5.62	5.74
11/27/91 12:07:10	5.55	5.62	5.69
11/27/91 13:07:10	5.57	5.64	5.69
11/27/91 14:07:10	5.6	5.69	5.76
11/27/91 15:07:10	5.64	5.74	5.83
11/27/91 16:07:10	5.67	5.74	5.81
11/27/91 17:07:10	5.74	5.76	5.81
11/27/91 18:07:10	5.74	5.76	5.81
11/27/91 19:07:10	5.71	5.74	5.76
11/27/91 20:07:10	5.69	5.74	5.76
11/27/91 21:07:10	5.69	5.71	5.74
11/27/91 22:07:10	5.69	5.69	5.71
11/27/91 23:07:10	5.69	5.71	5.74
11/28/91 00:07:10	5.67	5.69	5.74
11/28/91 01:07:10	5.64	5.69	5.76
11/28/91 02:07:10	5.67	5.71	5.76
11/28/91 03:07:10	5.71	5.74	5.78
11/28/91 04:07:10	5.74	5.76	5.78
11/28/91 05:07:10	5.71	5.74	5.78

11/28/91 10:07:10	5.5	5.6	5.64
11/28/91 11:07:10	5.53	5.6	5.67
11/28/91 12:07:10	5.57	5.62	5.67
11/28/91 13:07:10	5.6	5.67	5.74
11/28/91 14:07:10	5.62	5.71	5.78
11/28/91 15:07:10	5.67	5.71	5.76
11/28/91 16:07:10	5.69	5.74	5.78
11/28/91 17:07:10	5.71	5.74	5.76
11/28/91 18:07:10	5.71	5.74	5.78
11/28/91 19:07:10	5.69	5.74	5.76
11/28/91 20:07:10	5.67	5.71	5.74
11/28/91 21:07:10	5.67	5.69	5.74
11/28/91 22:07:10	5.69	5.69	5.71
11/28/91 23:07:10	5.69	5.69	5.71
11/29/91 00:07:10	5.69	5.74	5.74
11/29/91 01:07:10	5.71	5.74	5.76
11/29/91 02:07:10	5.71	5.74	5.76
11/29/91 03:07:10	5.71	5.74	5.76
11/29/91 04:07:10	5.74	5.74	5.78
11/29/91 05:07:10	5.74	5.74	5.76
11/29/91 06:07:10	5.71	5.74	5.76
11/29/91 07:07:10	5.71	5.74	5.76
11/29/91 08:07:10	5.64	5.69	5.74
11/29/91 09:07:10	5.6	5.62	5.67
11/29/91 10:07:10	5.57	5.62	5.67
11/29/91 11:07:10	5.55	5.62	5.71
11/29/91 12:07:10	5.53	5.64	5.76
11/29/91 13:07:10	5.55	5.64	5.83
11/29/91 14:07:10	5.62	5.74	5.85
11/29/91 15:07:10	5.62	5.74	5.85
11/29/91 16:07:10	5.67	5.74	5.78
11/29/91 17:07:10	5.74	5.76	5.81
11/29/91 18:07:10	5.74	5.76	5.78
11/29/91 19:07:10	5.69	5.74	5.78
11/29/91 20:07:10	5.71	5.71	5.76
11/29/91 21:07:10	5.69	5.71	5.71
11/29/91 22:07:10	5.69	5.71	5.74
11/29/91 23:07:10	5.69	5.71	5.74
11/30/91 00:07:10	5.69	5.71	5.76
11/30/91 01:07:10	5.71	5.74	5.76
11/30/91 02:07:10	5.71	5.74	5.76
11/30/91 03:07:10	5.69	5.74	5.76
11/30/91 04:07:10	5.69	5.71	5.76
11/30/91 05:07:10	5.69	5.71	5.74
11/30/91 06:07:10	5.67	5.69	5.71
11/30/91 07:07:10	5.64	5.67	5.71
11/30/91 08:07:10	5.64	5.67	5.69
11/30/91 09:07:10	5.6	5.64	5.67
11/30/91 10:07:10	5.57	5.6	5.62
11/30/91 11:07:10	5.5	5.57	5.62
11/30/91 12:07:10	5.48	5.6	5.67
11/30/91 13:07:10	5.6	5.64	5.74

11/30/91 18:07:10	5.67	5.71	5.76
11/30/91 19:07:10	5.67	5.69	5.69
11/30/91 20:07:10	5.64	5.69	5.71
11/30/91 21:07:10	5.64	5.67	5.71

11/30/91 22:07:10	5.64	5.67	5.67
11/30/91 23:07:10	5.64	5.67	5.69
12/01/91 00:07:10	5.64	5.67	5.69
12/01/91 01:07:10	5.64	5.67	5.69
12/01/91 02:07:10	5.64	5.67	5.69
12/01/91 03:07:10	5.64	5.67	5.69
12/01/91 04:07:10	5.64	5.67	5.71
12/01/91 05:07:10	5.64	5.67	5.71
12/01/91 06:07:10	5.64	5.67	5.69
12/01/91 07:07:10	5.64	5.67	5.69
12/01/91 08:07:10	5.6	5.64	5.69
12/01/91 09:07:10	5.57	5.6	5.67
12/01/91 10:07:10	5.55	5.57	5.62
12/01/91 11:07:10	5.53	5.57	5.62
12/01/91 12:07:10	5.43	5.6	5.69
12/01/91 13:07:10	5.55	5.64	5.71
12/01/91 14:07:10	5.57	5.64	5.71
12/01/91 15:07:10	5.6	5.67	5.71
12/01/91 16:07:10	5.62	5.67	5.74
12/01/91 17:07:10	5.64	5.67	5.74
12/01/91 18:07:10	5.67	5.69	5.74
12/01/91 19:07:10	5.67	5.67	5.71
12/01/91 20:07:10	5.64	5.69	5.69
12/01/91 21:07:10	5.62	5.67	5.69
12/01/91 22:07:10	5.64	5.67	5.69
12/01/91 23:07:10	5.62	5.64	5.67
12/02/91 00:07:10	5.6	5.62	5.67
12/02/91 01:07:10	5.6	5.62	5.67
12/02/91 02:07:10	5.62	5.67	5.69
12/02/91 03:07:10	5.62	5.67	5.69
12/02/91 04:07:10	5.64	5.67	5.69
12/02/91 05:07:10	5.64	5.67	5.69
12/02/91 06:07:10	5.64	5.67	5.69
12/02/91 07:07:10	5.64	5.67	5.69
12/02/91 08:07:10	5.62	5.64	5.69
12/02/91 09:07:10	5.6	5.62	5.67
12/02/91 10:07:10	5.5	5.6	5.64
12/02/91 11:07:10	5.5	5.6	5.64
12/02/91 12:07:10	5.55	5.64	5.74
12/02/91 13:07:10	5.6	5.64	5.74
12/02/91 14:07:10	5.53	5.67	5.74
12/02/91 15:07:10	5.57	5.67	5.71
12/02/91 16:07:10	5.64	5.69	5.74
12/02/91 17:07:10	5.67	5.69	5.76
12/02/91 18:07:10	5.67	5.71	5.76
12/02/91 19:07:10	5.64	5.67	5.71
12/02/91 20:07:10	5.67	5.71	5.74
12/02/91 21:07:10	5.67	5.69	5.74

12/03/91 02:07:10	5.69	5.71	5.74
12/03/91 03:07:10	5.69	5.71	5.74
12/03/91 04:07:10	5.71	5.74	5.78
12/03/91 05:07:10	5.74	5.76	5.81

12/03/91 06:07:10	5.74	5.78	5.81
12/03/91 07:07:10	5.74	5.76	5.78
12/03/91 08:07:10	5.74	5.76	5.78
12/03/91 09:07:10	5.67	5.74	5.78
12/03/91 10:07:10	5.62	5.71	5.85
12/03/91 11:07:10	5.62	5.74	5.83
12/03/91 12:07:10	5.62	5.74	5.83
12/03/91 13:07:10	5.62	5.78	5.85
12/03/91 14:07:10	5.71	5.83	5.92
12/03/91 15:07:10	5.78	5.85	5.92
12/03/91 16:07:10	5.83	5.9	6.04
12/03/91 17:07:10	5.81	5.85	5.94
12/03/91 18:07:10	5.78	5.81	5.83
12/03/91 19:07:10	5.74	5.78	5.83
12/03/91 20:07:10	5.74	5.76	5.81
12/03/91 21:07:10	5.69	5.71	5.76
12/03/91 22:07:10	5.67	5.69	5.74
12/03/91 23:07:10	5.67	5.69	5.71
12/04/91 00:07:10	5.64	5.67	5.69
12/04/91 01:07:10	5.64	5.67	5.69
12/04/91 02:07:10	5.64	5.64	5.69
12/04/91 03:07:10	5.64	5.67	5.69
12/04/91 04:07:10	5.64	5.67	5.69
12/04/91 05:07:10	5.62	5.64	5.67
12/04/91 06:07:10	5.6	5.62	5.64
12/04/91 07:07:10	5.6	5.6	5.64
12/04/91 08:07:10	5.48	5.55	5.62
12/04/91 09:07:10	5.46	5.53	5.57
12/04/91 10:07:10	5.46	5.5	5.55
12/04/91 11:07:10	5.46	5.5	5.57
12/04/91 12:07:10	5.46	5.53	5.6
12/04/91 13:07:10	5.48	5.55	5.64
12/04/91 14:07:10	5.53	5.6	5.67
12/04/91 15:07:10	5.55	5.62	5.76
12/04/91 16:07:10	5.55	5.62	5.69
12/04/91 17:07:10	5.6	5.62	5.67
12/04/91 18:07:10	5.57	5.62	5.64
12/04/91 19:07:10	5.57	5.6	5.62
12/04/91 20:07:10	5.5	5.55	5.6
12/04/91 21:07:10	5.53	5.55	5.57
12/04/91 22:07:10	5.5	5.5	5.55
12/04/91 23:07:10	5.48	5.5	5.55
12/05/91 00:07:10	5.48	5.53	5.55
12/05/91 01:07:10	5.5	5.53	5.55
12/05/91 02:07:10	5.5	5.5	5.55
12/05/91 03:07:10	5.5	5.55	5.57
12/05/91 04:07:10	5.5	5.53	5.55
12/05/91 05:07:10	5.5	5.55	5.57

12/05/91 10:07:10	5.36	5.43	5.48
12/05/91 11:07:10	5.41	5.46	5.5
12/05/91 12:07:10	5.41	5.48	5.55
12/05/91 13:07:10	5.43	5.5	5.6

12/05/91 14:07:10	5.48	5.55	5.6
12/05/91 15:07:10	5.53	5.6	5.69
12/05/91 16:07:10	5.53	5.6	5.69
12/05/91 17:07:10	5.57	5.62	5.67
12/05/91 18:07:10	5.6	5.62	5.64
12/05/91 19:07:10	5.57	5.6	5.64
12/05/91 20:07:10	5.6	5.62	5.64
12/05/91 21:07:10	5.6	5.62	5.64
12/05/91 22:07:10	5.62	5.64	5.67
12/05/91 23:07:10	5.62	5.64	5.69
12/06/91 00:07:10	5.6	5.64	5.69
12/06/91 01:07:10	5.62	5.64	5.69
12/06/91 02:07:10	5.64	5.67	5.69
12/06/91 03:07:10	5.64	5.67	5.69
12/06/91 04:07:10	5.64	5.69	5.71
12/06/91 05:07:10	5.67	5.69	5.71
12/06/91 06:07:10	5.67	5.69	5.74
12/06/91 07:07:10	5.67	5.71	5.74
12/06/91 08:07:10	5.62	5.67	5.71
12/06/91 09:07:10	5.55	5.62	5.69
12/06/91 10:07:10	5.5	5.57	5.67
12/06/91 11:07:10	5.48	5.6	5.69
12/06/91 12:07:10	5.53	5.62	5.74
12/06/91 13:07:10	5.57	5.67	5.76
12/06/91 14:07:10	5.57	5.67	5.76
12/06/91 15:07:10	5.64	5.74	5.81
12/06/91 16:07:10	5.69	5.74	5.81
12/06/91 17:07:10	5.76	5.78	5.81
12/06/91 18:07:10	5.76	5.76	5.81
12/06/91 19:07:10	5.71	5.74	5.76
12/06/91 20:07:10	5.71	5.74	5.76
12/06/91 21:07:10	5.69	5.74	5.76
12/06/91 22:07:10	5.69	5.74	5.76
12/06/91 23:07:10	5.69	5.74	5.76
12/07/91 00:07:10	5.69	5.71	5.74
12/07/91 01:07:10	5.74	5.76	5.78
12/07/91 02:07:10	5.74	5.76	5.78
12/07/91 03:07:10	5.74	5.76	5.78
12/07/91 04:07:10	5.74	5.76	5.78
12/07/91 05:07:10	5.74	5.76	5.78
12/07/91 06:07:10	5.74	5.76	5.78
12/07/91 07:07:10	5.74	5.76	5.76
12/07/91 08:07:10	5.67	5.71	5.76
12/07/91 09:07:10	5.6	5.64	5.74
12/07/91 10:07:10	5.57	5.62	5.71
12/07/91 11:07:10	5.55	5.62	5.67
12/07/91 12:07:10	5.57	5.64	5.74
12/07/91 13:07:10	5.6	5.71	5.81

12/07/91 18:07:10	5.76	5.78	5.83
12/07/91 19:07:10	5.74	5.76	5.81
12/07/91 20:07:10	5.74	5.76	5.78
12/07/91 21:07:10	5.71	5.76	5.78
12/07/91 22:07:10	5.74	5.74	5.78
12/07/91 23:07:10	5.71	5.74	5.76
12/08/91 00:07:10	5.71	5.74	5.76
12/08/91 01:07:10	5.69	5.74	5.76
12/08/91 02:07:10	5.69	5.71	5.74
12/08/91 03:07:10	5.69	5.71	5.74
12/08/91 04:07:10	5.69	5.74	5.76
12/08/91 05:07:10	5.69	5.71	5.74
12/08/91 06:07:10	5.69	5.71	5.76
12/08/91 07:07:10	5.67	5.69	5.74
12/08/91 08:07:10	5.6	5.67	5.71
12/08/91 09:07:10	5.5	5.62	5.67
12/08/91 10:07:10	5.46	5.6	5.67
12/08/91 11:07:10	5.5	5.55	5.62
12/08/91 12:07:10	5.5	5.64	5.74
12/08/91 13:07:10	5.57	5.64	5.69
12/08/91 14:07:10	5.57	5.64	5.69
12/08/91 15:07:10	5.6	5.71	5.81
12/08/91 16:07:10	5.69	5.71	5.76
12/08/91 17:07:10	5.69	5.71	5.76
12/08/91 18:07:10	5.69	5.71	5.76
12/08/91 19:07:10	5.67	5.69	5.74
12/08/91 20:07:10	5.67	5.67	5.71
12/08/91 21:07:10	5.64	5.67	5.69
12/08/91 22:07:10	5.67	5.67	5.69
12/08/91 23:07:10	5.64	5.67	5.69
12/09/91 00:07:10	5.67	5.69	5.71
12/09/91 01:07:10	5.67	5.69	5.71
12/09/91 02:07:10	5.69	5.74	5.74
12/09/91 03:07:10	5.69	5.74	5.74
12/09/91 04:07:10	5.69	5.69	5.74
12/09/91 05:07:10	5.69	5.74	5.76
12/09/91 06:07:10	5.71	5.76	5.76
12/09/91 07:07:10	5.69	5.74	5.74
12/09/91 08:07:10	5.69	5.69	5.74
12/09/91 09:07:10	5.64	5.67	5.71
12/09/91 10:07:10	5.6	5.67	5.71
12/09/91 11:07:10	5.55	5.62	5.76
12/09/91 12:07:10	5.55	5.67	5.74
12/09/91 13:07:10	5.62	5.69	5.83
12/09/91 14:07:10	5.64	5.76	5.85
12/09/91 15:07:10	5.67	5.78	5.85
12/09/91 16:07:10	5.71	5.81	5.88
12/09/91 17:07:10	5.78	5.83	5.88
12/09/91 18:07:10	5.78	5.81	5.85
12/09/91 19:07:10	5.78	5.78	5.83
12/09/91 20:07:10	5.78	5.78	5.83
12/09/91 21:07:10	5.76	5.78	5.81

12/10/91 02:07:10	5.76	5.78	5.78
12/10/91 03:07:10	5.76	5.78	5.78
12/10/91 04:07:10	5.76	5.78	5.78
12/10/91 05:07:10	5.74	5.78	5.81

12/10/91 06:07:10	5.76	5.78	5.81
12/10/91 07:07:10	5.71	5.74	5.78
12/10/91 08:07:10	5.62	5.67	5.74
12/10/91 09:07:10	5.57	5.62	5.67
12/10/91 10:07:10	5.55	5.6	5.64
12/10/91 11:07:10	5.5	5.57	5.67
12/10/91 12:07:10	5.5	5.62	5.78
12/10/91 13:07:10	5.48	5.6	5.76
12/10/91 14:07:10	5.5	5.62	5.81
12/10/91 15:07:10	5.57	5.67	5.78
12/10/91 16:07:10	5.55	5.64	5.74
12/10/91 17:07:10	5.62	5.67	5.69
12/10/91 18:07:10	5.6	5.62	5.67
12/10/91 19:07:10	5.57	5.6	5.64
12/10/91 20:07:10	5.57	5.57	5.62
12/10/91 21:07:10	5.55	5.6	5.6
12/10/91 22:07:10	5.53	5.55	5.57
12/10/91 23:07:10	5.55	5.55	5.57
12/11/91 00:07:10	5.5	5.53	5.57
12/11/91 01:07:10	5.53	5.55	5.57
12/11/91 02:07:10	5.53	5.55	5.57
12/11/91 03:07:10	5.5	5.53	5.57
12/11/91 04:07:10	5.5	5.55	5.57
12/11/91 05:07:10	5.53	5.55	5.57
12/11/91 06:07:10	5.5	5.55	5.57
12/11/91 07:07:10	5.5	5.53	5.55
12/11/91 08:07:10	5.43	5.48	5.55
12/11/91 09:07:10	5.39	5.43	5.48
12/11/91 10:07:10	5.36	5.41	5.48
12/11/91 11:07:10	5.34	5.41	5.48
12/11/91 12:07:10	5.39	5.43	5.48
12/11/91 13:07:10	5.41	5.48	5.6
12/11/91 14:07:10	5.41	5.48	5.62
12/11/91 15:07:10	5.46	5.55	5.64
12/11/91 16:07:10	5.46	5.55	5.62
12/11/91 17:07:10	5.55	5.55	5.62
12/11/91 18:07:10	5.5	5.55	5.6
12/11/91 19:07:10	5.53	5.55	5.57
12/11/91 20:07:10	5.5	5.53	5.57
12/11/91 21:07:10	5.5	5.5	5.53
12/11/91 22:07:10	5.48	5.5	5.55
12/11/91 23:07:10	5.48	5.5	5.55
12/12/91 00:07:10	5.48	5.5	5.55
12/12/91 01:07:10	5.5	5.53	5.55
12/12/91 02:07:10	5.5	5.53	5.55
12/12/91 03:07:10	5.5	5.53	5.55
12/12/91 04:07:10	5.5	5.53	5.55
12/12/91 05:07:10	5.5	5.53	5.55

12/12/91 10:07:10	5.41	5.46	5.48
12/12/91 11:07:10	5.34	5.41	5.5
12/12/91 12:07:10	5.36	5.48	5.57
12/12/91 13:07:10	5.39	5.48	5.57

12/12/91 14:07:10	5.5	5.55	5.6
12/12/91 15:07:10	5.5	5.55	5.57
12/12/91 16:07:10	5.5	5.55	5.6
12/12/91 17:07:10	5.53	5.55	5.6
12/12/91 18:07:10	5.53	5.55	5.6
12/12/91 19:07:10	5.5	5.55	5.6
12/12/91 20:07:10	5.53	5.55	5.57
12/12/91 21:07:10	5.5	5.53	5.57
12/12/91 22:07:10	5.5	5.55	5.57
12/12/91 23:07:10	5.53	5.57	5.6
12/13/91 00:07:10	5.53	5.57	5.6
12/13/91 01:07:10	5.53	5.55	5.6
12/13/91 02:07:10	5.55	5.6	5.6
12/13/91 03:07:10	5.55	5.57	5.6
12/13/91 04:07:10	5.55	5.6	5.62
12/13/91 05:07:10	5.55	5.57	5.6
12/13/91 06:07:10	5.57	5.6	5.64
12/13/91 07:07:10	5.55	5.57	5.57
12/13/91 08:07:10	5.5	5.53	5.57
12/13/91 09:07:10	5.43	5.5	5.55
12/13/91 10:07:10	5.39	5.46	5.5
12/13/91 11:07:10	5.39	5.46	5.53
12/13/91 12:07:10	5.39	5.48	5.57
12/13/91 13:07:10	5.41	5.53	5.64
12/13/91 14:07:10	5.41	5.53	5.64
12/13/91 15:07:10	5.48	5.57	5.67
12/13/91 16:07:10	5.48	5.6	5.67
12/13/91 17:07:10	5.6	5.64	5.69
12/13/91 18:07:10	5.6	5.64	5.67
12/13/91 19:07:10	5.55	5.6	5.64
12/13/91 20:07:10	5.55	5.57	5.62
12/13/91 21:07:10	5.55	5.57	5.6
12/13/91 22:07:10	5.57	5.6	5.62
12/13/91 23:07:10	5.55	5.57	5.6
12/14/91 00:07:10	5.55	5.6	5.62
12/14/91 01:07:10	5.55	5.57	5.62
12/14/91 02:07:10	5.57	5.57	5.62
12/14/91 03:07:10	5.57	5.62	5.62
12/14/91 04:07:10	5.57	5.6	5.64
12/14/91 05:07:10	5.6	5.6	5.62
12/14/91 06:07:10	5.6	5.6	5.64
12/14/91 07:07:10	5.57	5.6	5.64
12/14/91 08:07:10	5.57	5.57	5.62
12/14/91 09:07:10	5.55	5.57	5.6
12/14/91 10:07:10	5.41	5.53	5.6
12/14/91 11:07:10	5.43	5.55	5.6
12/14/91 12:07:10	5.53	5.57	5.62
12/14/91 13:07:10	5.5	5.6	5.64

12/14/91 18:07:10	5.55	5.6	5.64
12/14/91 19:07:10	5.55	5.57	5.62
12/14/91 20:07:10	5.5	5.53	5.57
12/14/91 21:07:10	5.48	5.5	5.55

12/14/91 22:07:10	5.48	5.5	5.53
12/14/91 23:07:10	5.46	5.48	5.53
12/15/91 00:07:10	5.46	5.46	5.48
12/15/91 01:07:10	5.46	5.48	5.5
12/15/91 02:07:10	5.46	5.48	5.5
12/15/91 03:07:10	5.46	5.48	5.5
12/15/91 04:07:10	5.43	5.46	5.5
12/15/91 05:07:10	5.41	5.46	5.5
12/15/91 06:07:10	5.41	5.43	5.48
12/15/91 07:07:10	5.39	5.41	5.43
12/15/91 08:07:10	5.32	5.39	5.41
12/15/91 09:07:10	5.2	5.29	5.36
12/15/91 10:07:10	5.2	5.27	5.36
12/15/91 11:07:10	5.2	5.27	5.36
12/15/91 12:07:10	5.22	5.29	5.41
12/15/91 13:07:10	5.27	5.32	5.41
12/15/91 14:07:10	5.29	5.36	5.46
12/15/91 15:07:10	5.36	5.43	5.5
12/15/91 16:07:10	5.36	5.43	5.5
12/15/91 17:07:10	5.46	5.48	5.5
12/15/91 18:07:10	5.43	5.46	5.48
12/15/91 19:07:10	5.41	5.46	5.48
12/15/91 20:07:10	5.41	5.43	5.46
12/15/91 21:07:10	5.39	5.41	5.43
12/15/91 22:07:10	5.39	5.41	5.43
12/15/91 23:07:10	5.39	5.41	5.43
12/16/91 00:07:10	5.39	5.43	5.46
12/16/91 01:07:10	5.41	5.43	5.46
12/16/91 02:07:10	5.41	5.46	5.48
12/16/91 03:07:10	5.41	5.43	5.46
12/16/91 04:07:10	5.39	5.43	5.46
12/16/91 05:07:10	5.39	5.41	5.46
12/16/91 06:07:10	5.39	5.43	5.46
12/16/91 07:07:10	5.39	5.41	5.46
12/16/91 08:07:10	5.22	5.36	5.41
12/16/91 09:07:10	5.2	5.25	5.32
12/16/91 10:07:10	5.22	5.27	5.34
12/16/91 11:07:10	5.22	5.27	5.36
12/16/91 12:07:10	5.25	5.29	5.36
12/16/91 13:07:10	5.27	5.34	5.41
12/16/91 14:07:10	5.29	5.36	5.46
12/16/91 15:07:10	5.34	5.41	5.5
12/16/91 16:07:10	5.36	5.43	5.48
12/16/91 17:07:10	5.43	5.46	5.48
12/16/91 18:07:10	5.41	5.43	5.46
12/16/91 19:07:10	5.39	5.41	5.46
12/16/91 20:07:10	5.39	5.41	5.41
12/16/91 21:07:10	5.36	5.39	5.41

12/17/91 02:07:10	5.39	5.41	5.43
12/17/91 03:07:10	5.39	5.39	5.43
12/17/91 04:07:10	5.39	5.41	5.43
12/17/91 05:07:10	5.41	5.41	5.43

12/17/91 06:07:10	5.39	5.41	5.46
12/17/91 07:07:10	5.36	5.41	5.43
12/17/91 08:07:10	5.27	5.34	5.43
12/17/91 09:07:10	5.27	5.29	5.36
12/17/91 10:07:10	5.22	5.27	5.32
12/17/91 11:07:10	5.22	5.29	5.34
12/17/91 12:07:10	5.25	5.32	5.39
12/17/91 13:07:10	5.29	5.34	5.43
12/17/91 14:07:10	5.36	5.41	5.48
12/17/91 15:07:10	5.39	5.48	5.57
12/17/91 16:07:10	5.41	5.48	5.57
12/17/91 17:07:10	5.5	5.53	5.57
12/17/91 18:07:10	5.5	5.53	5.55
12/17/91 19:07:10	5.48	5.5	5.53
12/17/91 20:07:10	5.46	5.48	5.5
12/17/91 21:07:10	5.46	5.48	5.5
12/17/91 22:07:10	5.43	5.46	5.48
12/17/91 23:07:10	5.41	5.46	5.48
12/18/91 00:07:10	5.43	5.46	5.48
12/18/91 01:07:10	5.46	5.48	5.5
12/18/91 02:07:10	5.46	5.46	5.5
12/18/91 03:07:10	5.43	5.46	5.5
12/18/91 04:07:10	5.43	5.46	5.5
12/18/91 05:07:10	5.46	5.48	5.48
12/18/91 06:07:10	5.46	5.46	5.48
12/18/91 07:07:10	5.43	5.46	5.48
12/18/91 08:07:10	5.32	5.39	5.46
12/18/91 09:07:10	5.29	5.34	5.39
12/18/91 10:07:10	5.29	5.32	5.36
12/18/91 11:07:10	5.27	5.32	5.39
12/18/91 12:07:10	5.32	5.39	5.48
12/18/91 13:07:10	5.36	5.41	5.48
12/18/91 14:07:10	5.36	5.43	5.5
12/18/91 15:07:10	5.41	5.48	5.57
12/18/91 16:07:10	5.41	5.48	5.55
12/18/91 17:07:10	5.48	5.48	5.55
12/18/91 18:07:10	5.48	5.5	5.53
12/18/91 19:07:10	5.43	5.46	5.48
12/18/91 20:07:10	5.39	5.41	5.43
12/18/91 21:07:10	5.34	5.39	5.41
12/18/91 22:07:10	5.32	5.36	5.39
12/18/91 23:07:10	5.29	5.32	5.36
12/19/91 00:07:10	5.27	5.32	5.34
12/19/91 01:07:10	5.27	5.29	5.32
12/19/91 02:07:10	5.22	5.27	5.29
12/19/91 03:07:10	5.22	5.25	5.29
12/19/91 04:07:10	5.18	5.2	5.25
12/19/91 05:07:10	5.2	5.22	5.25

APPENDIX E

HYDROGEOLOGIC CALCULATIONS

ESE Environmental Science & Engineering, Inc.
A CILCORP Company

P.O. Box 1703 Gainesville, Florida 32602-1703
904-332-3318 Fax 904-332-0507

JOB WRIGHT 39120156-0100-3130
SHEET NO. 1 OF
CALCULATED BY G Wise DATE 8/7/92
CHECKED BY DATE
SCALE

Purpose: Calculate groundwater velocities from available slug test data and piezometric surface elevation data.

Reference: Peck, Hanson, & Thornburn, 1974

Calculation: Linear flow velocity

I = Gradient

K = hydraulic conductivity

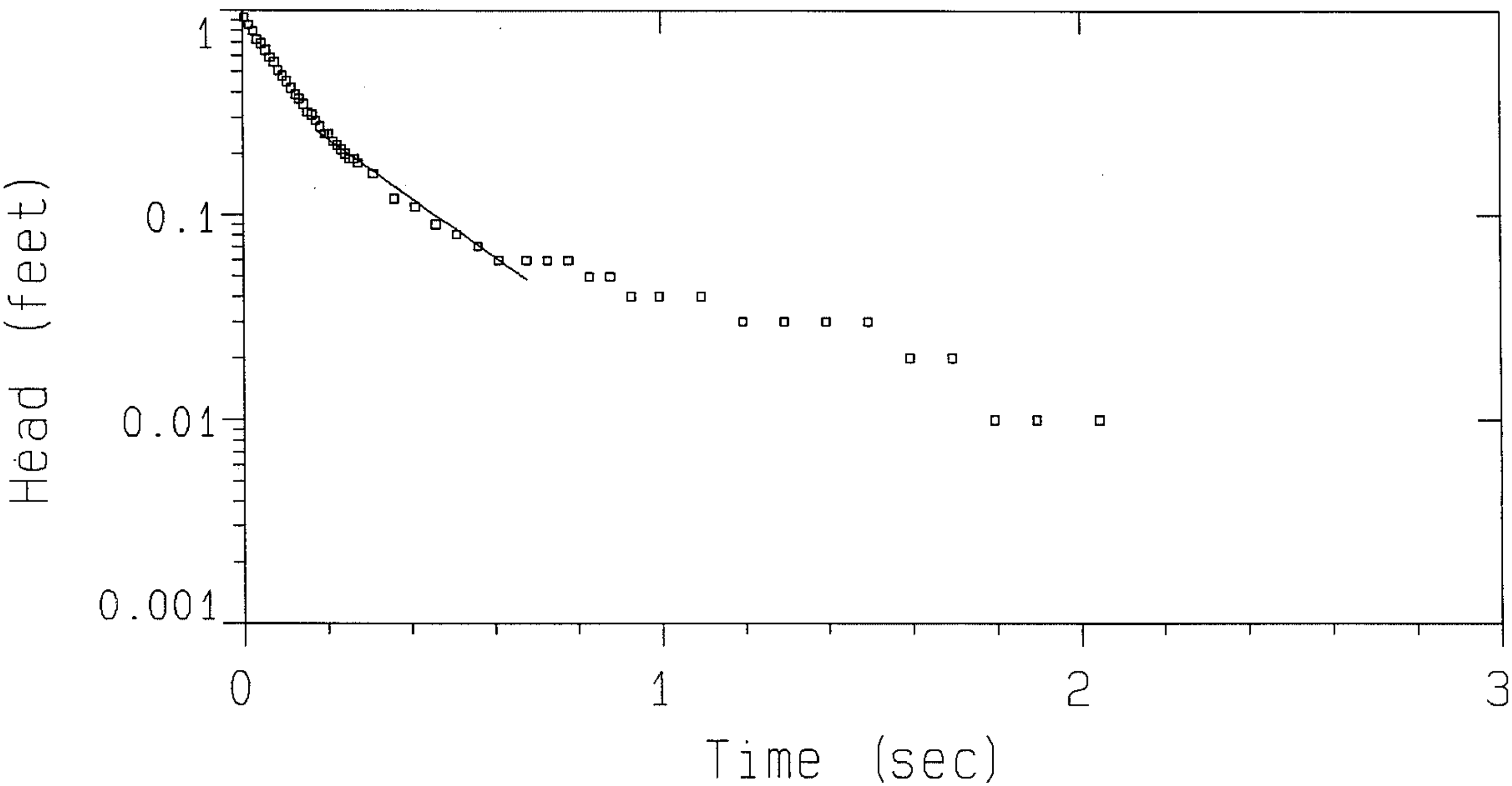
n = porosity (assume 30%)

V = linear flow velocity

$$V = KI/n$$

$$V(\text{ft/min}) \times 60\ \text{min/hr} \times 24\ \text{hr/day} \times 365\ \text{day/yr} = \text{ft/yr}$$

WELL NO.	I (ft/ft)	K (ft/min)	V (ft/min)	V (ft/yr)
WMW-3 (shallow)	0.00234 (low)	0.00191 (low)	1.5×10^{-5}	7.8
	0.00348 (avg)	0.00225 (avg)	2.6×10^{-5}	13.7
	0.00655 (high)	0.00258 (high)	5.6×10^{-5}	29.6



MODEL TYPE: BOUWER and RICE

CONDUCTIVITY: .002582 ft/min

TRANSMISSIVITY: .02225 sq. ft/min

INITIAL HEAD: .9300 ft

Data Set: WMW5-20 | Date: 08/06/92

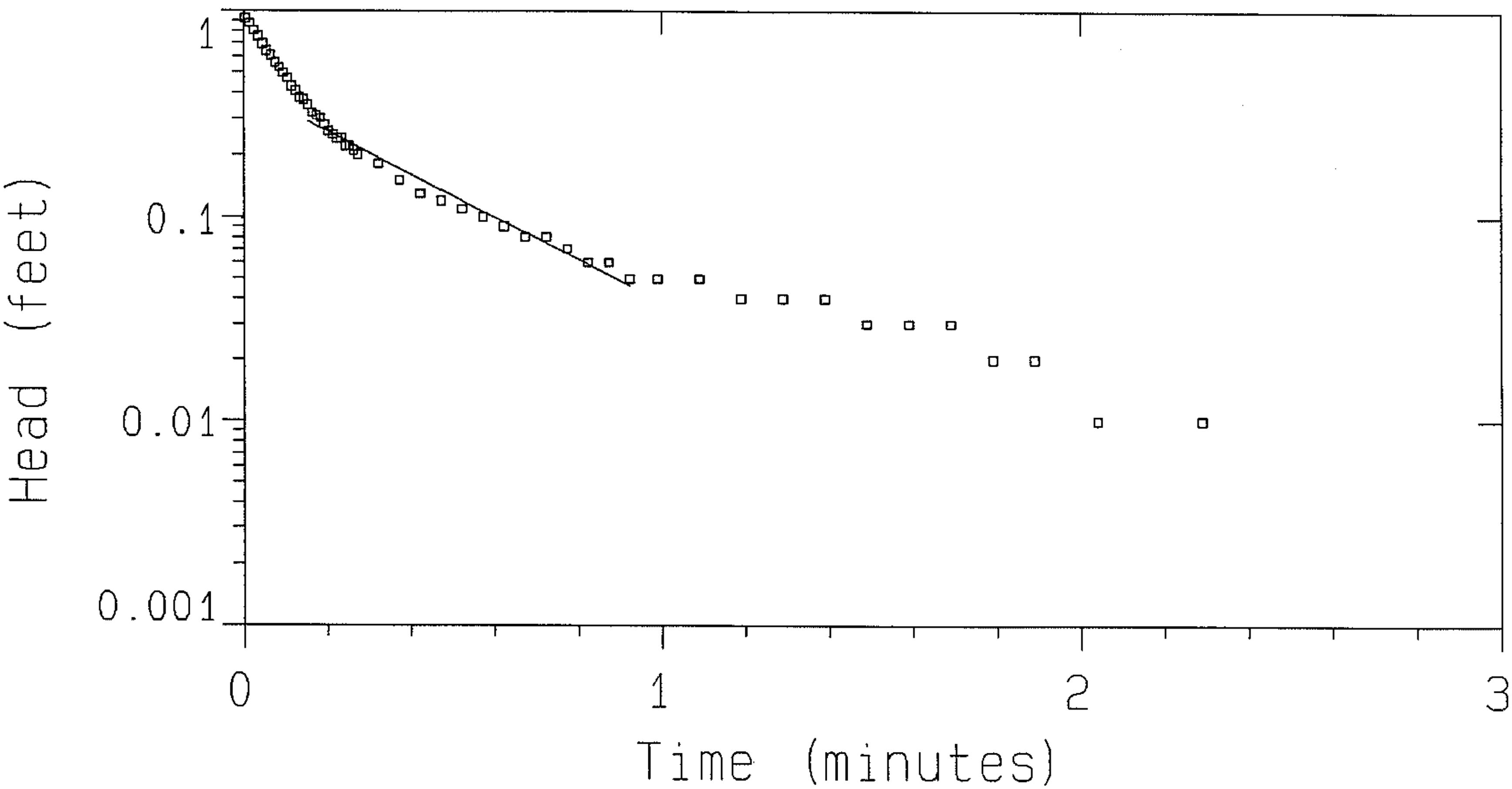
for: U.S. Army Corps of Engineers

by: Environmental Science & Engineering

WELL DATA: Units: ft
AQUIFER: Water Table
THICKNESS: 8.620
SCREEN: top: 3.000 base: 15.50
DIAMETER: casing: .1666 intake: .6666
DEPTH: Water Table: 9.380 TD: 15.50

Slug Test Data (Slug-Out)

Well: WMW-5
Wright A.A.F.
Savannah, GA



MODEL TYPE: BOUWER and RICE

CONDUCTIVITY: .001913 ft/min

TRANSMISSIVITY: .01649 sq. ft/min

INITIAL HEAD: .9200 ft

Data Set: WMW5-10 | Date: 08/06/92

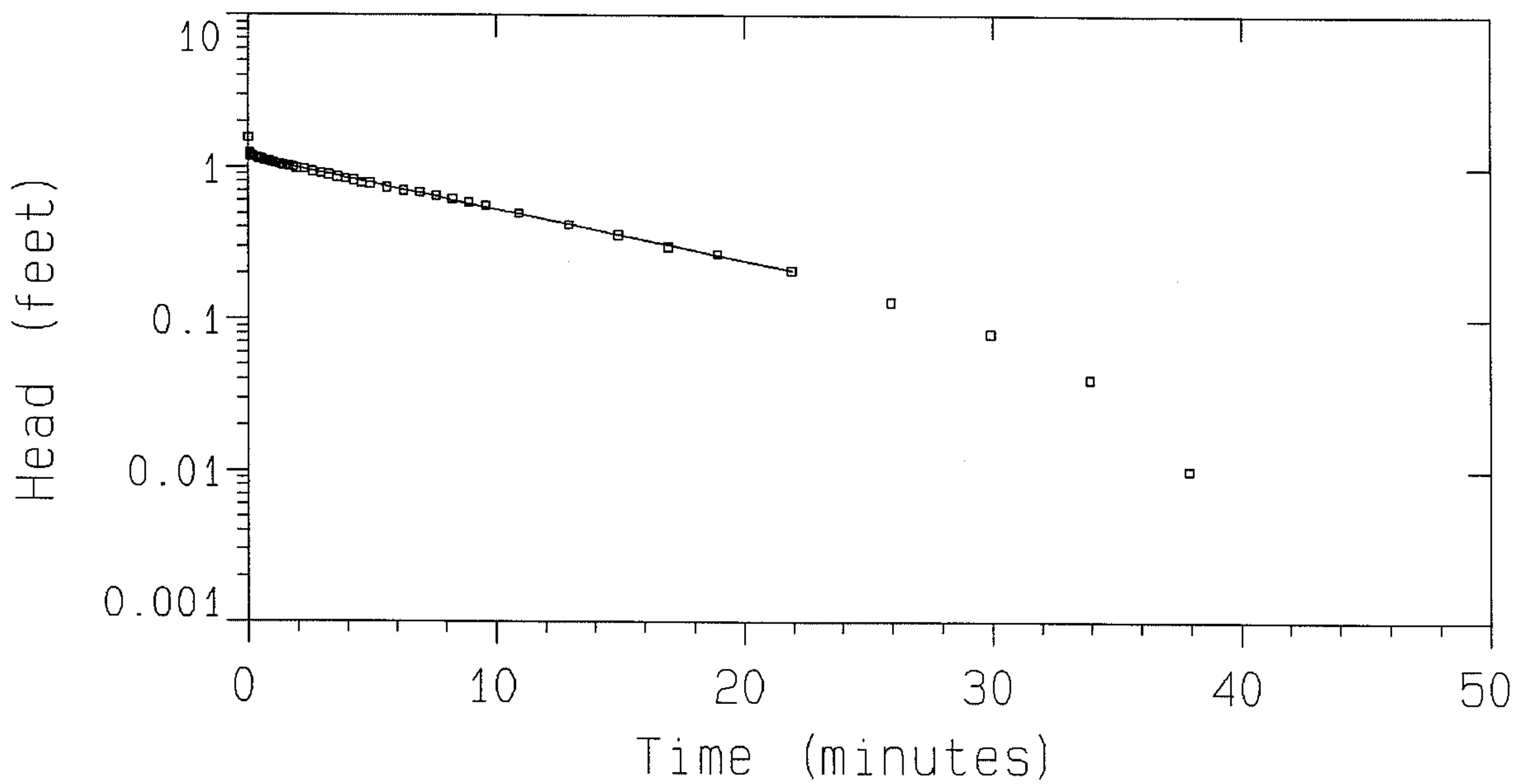
for: U.S. Army Corps of Engineers

by: Environmental Science & Engineering

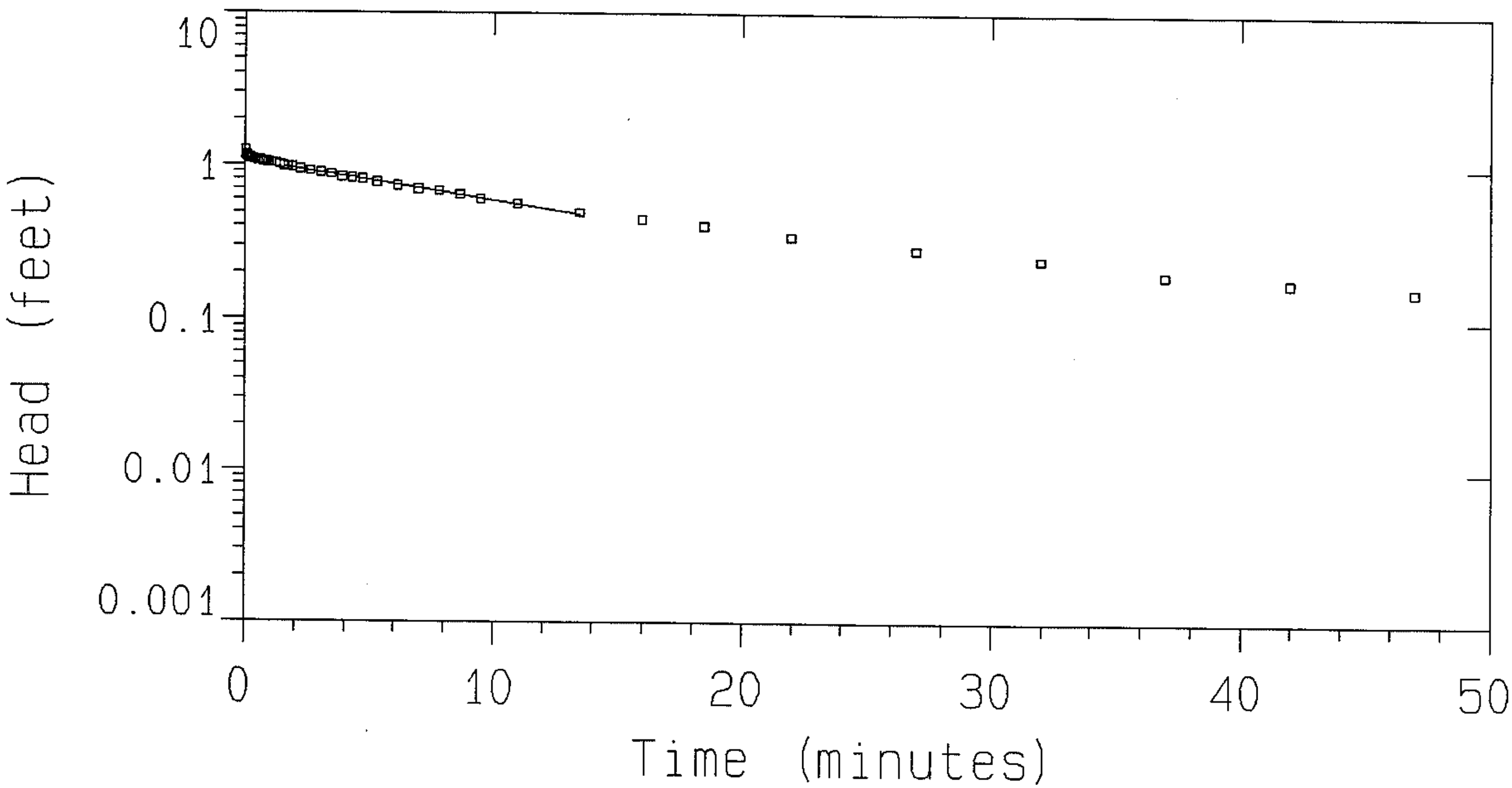
WELL DATA: Units: ft
AQUIFER: Water Table
THICKNESS: 8.620
SCREEN: top: 3.000 base: 15.50
DIAMETER: casing: .1666 intake: .6666
DEPTH: Water Table: 9.380 TD: 15.50

Slug Test Data (Slug-Out)

Well: WMW-5
Wright A.A.F.
Savannah, GA



MODEL TYPE: BOUWER and RICE	for: U.S. Army Corps of Engineers	Slug Test Data (Slug-In)
CONDUCTIVITY: 9.502E-5 ft/min	by: Environmental Science & Engineering	Well: WMW-7
TRANSMISSIVITY: .004104 sq. ft/min	WELL DATA: Units: ft AQUIFER: Water Table THICKNESS: 43.19	Wright A.A.F.
INITIAL HEAD: 1.550 ft	SCREEN: top: 40.00 base: 50.00	Savannah, GA
Data Set: WMW7-1I — Date: 08/06/92	DIAMETER: casing: .1666 intake: .6666 DEPTH: Water Table: 9.310 TD: 50.00	



MODEL TYPE: BOUWER and RICE	for: U.S. Army Corps of Engineers	Slug Test Data (Slug-Out)
CONDUCTIVITY: 7.161E-5 ft/min	by: Environmental Science & Engineering	Well: WMW-7
TRANSMISSIVITY: .003093 sq. ft/min	WELL DATA: Units: ft AQUIFER: Water Table THICKNESS: 43.19	Wright A.A.F.
INITIAL HEAD: 1.240 ft	SCREEN: top: 40.00 base: 50.00	Savannah, GA
Data Set: WMW7-10 Date: 08/06/92	DIAMETER: casing: .1666 intake: .6666 DEPTH: Water Table: 9.310 TD: 50.00	

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APPENDIX F

LITHOLOGIC LOGS AND WELL CONSTRUCTION LOGS AND SIEVE ANALYSIS

Wright Army Airfield
Fort Stewart, Savannah, GA

Log of Boring No. WMW-4

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/6/92
Project Number:	3912015G	Boring Completed:	3/6/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	2 inch
Logged By:	G. Foster	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	MATERIAL DESCRIPTION
	0	CS	3.4	0		(SP) SAND, medium brown, fine-grained, wet
						(CL) CLAY, gravelly, gray and red, moist
						(SM) SAND, silty, yellow and gray, fine-grained, moist becoming wet
						(CL) CLAY, sandy, mottled orange and red, moist becoming wet
	4	CS	3.1	0		
	5					
						(CL-SM) CLAY AND SAND, intermixed fine-grained, silty sand and red and gray sandy clay, wet
	9	CS	2.8	0		
	10					(SM) SAND, silty, orange, red, and gray, fine- to medium-grained, with occasional clay lenses, wet
	15					
						BORING TERMINATED AT 15.5 FT BGS

Dynamic Pentration Resistance Blows/ft × 8 16 24 32

PID (ppm) □ 100 200 300 400

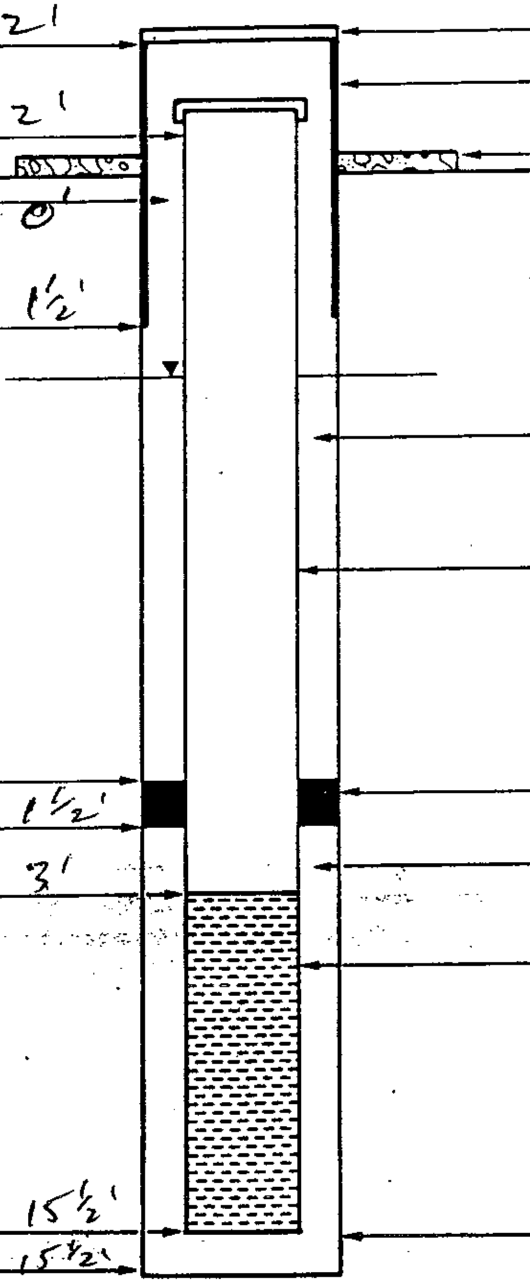
SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92 ESE

MONITOR WELL CONSTRUCTION

Logged By: G. Foster
Drilling Contractor: Layne-A+L
Driller's Name: Daniel Nichols
Well Number: MW 5-1 (WMW4)
Client: USACE
Location: Wright AAF FTA, Ft. Stewart
Job Number:
Date/Time: Start 3/6/93 Finish 3/6/92
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):
NSA

Depths in Reference to Ground Level



- Top of Protective Casing: 2'
- Top of Well Casing: 2'
- Top of ~~Cement~~ Grout: 0'
- Bottom of Protective Casing: 1½'
- Ground Water
- Top of Bentonite Seal
- Top of Gravel Pack: 1½'
- Top of Screen: 3'
- Bottom of Screen: 15½'
- Total Depth of Bore Hole: 15½'

- Locking Cap
- Protective Pipe Type, Diameter: Steel, 4"
- Cement/Gravel Pad
- Type of Grout: Volclay
- Casing: Type: Sch 40 PVC; Diameter: 2"
- Couplings: Type: Threaded; Number: 2; Depths: 3, 13'
- Type of Plug: NA
- Gravel Pack: Material: 20/30 Si
- Screen: Type: Sch 40 PVC; Diameter: 2"; Length: 12½'; Slot Size: 0.010"
- Bore Hole Diameter: 8"

NOT TO SCALE

Wright Army Airfield
Fort Stewart, Savannah, GA

Log of Boring No. WMW-5

Sheet No. 1 of 1

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/6/92
Project Number:	3912015G	Boring Completed:	3/6/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	2 inch
Logged By:	G. Foster	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

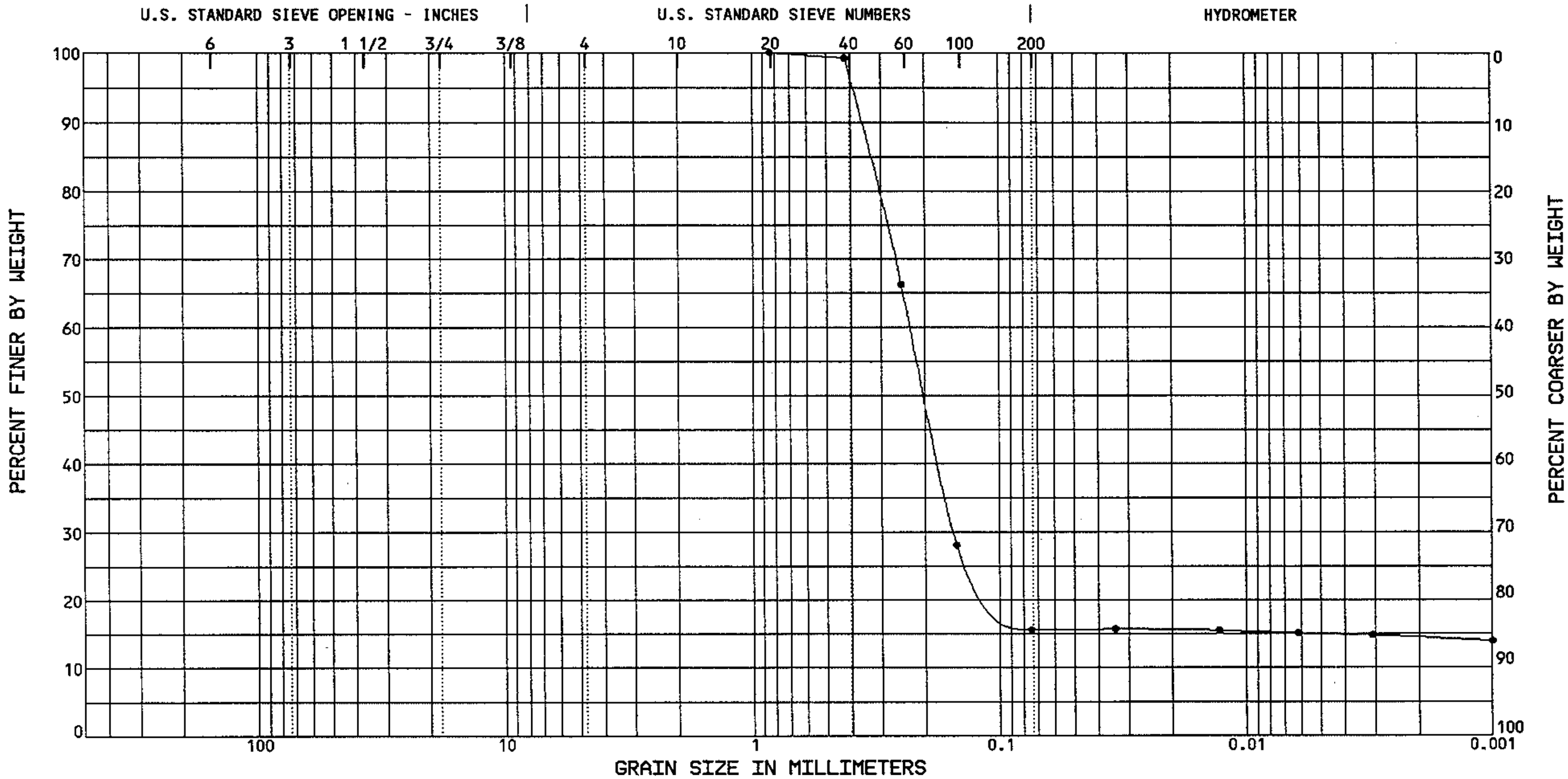
Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION	Dynamic Pentration Resistance Blows/ft × (8, 16, 24, 32); PID (ppm) □ (100, 200, 300, 400)
		CS	3.2	0				(SM) SAND, silty, brown grading to yellow, fine-grained, moist	
								3 ft - becomes wet	
	5	CS	2.8	0				(CL-SM) CLAY AND SAND, sandy clay intermixed with silty sand, red and gray, wet, becoming sandier with depth	
	10	CS	3.3	0					
								(SM) SAND, silty, orange, red, and gray mottled, fine- to medium-grained, wet	
	15								
								BORING TERMINATED AT 15.5 FT BGS	

SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92

ESE

3/24/92gnszese\



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	WC%	LL	PL	PI	Cc	Cu
Point ID WMW-5 Depth 12.0 ft							

D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
0.84	0.23	0.154		0	84	1	15

Wright Army Airfield
Fort Stewart, Savannah, GA
Project No: 3912015G

GRAIN SIZE DISTRIBUTION CURVE

Environmental Science and Engineering
Gainesville, Florida
March 19, 1992

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MONITOR WELL CONSTRUCTION

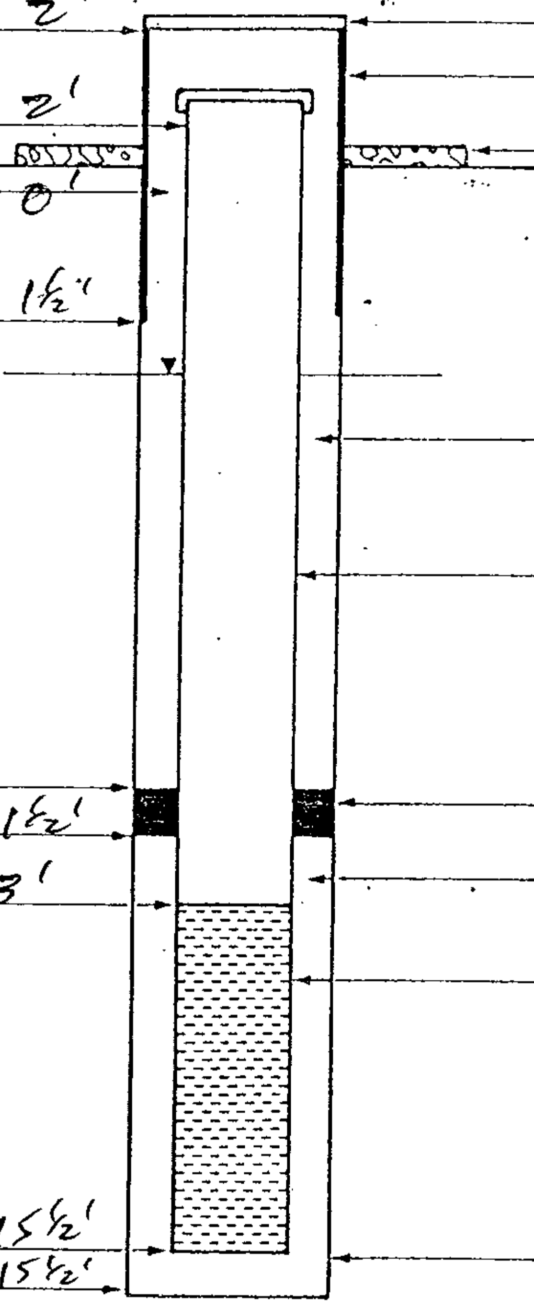
Logged By: G. T. Otter
Drilling Contractor: Layne A+I
Driller's Name: Daniel Weddle
Well Number: MW3-2 (WMW-5)

Client: USACE
Location: Wright AAF, FTA, Ft Stew
Job Number:
Date/Time: Start 3/6/92 Finish 3/6/92

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

HSA

Depths in Reference to Ground Level



Top of Protective Casing	2'
Top of Well Casing	2'
Top of ~~Cement~~ Grout	0'
Bottom of Protective Casing	1½'
Ground Water	
Top of Bentonite Seal	
Top of Gravel Pack	1½'
Top of Screen	3'
Bottom of Screen	15½'
Total Depth of Bore Hole	15½'

Locking Cap

Protective Pipe Type, Diameter: Steel, 4"

Cement/Gravel Pad

Type of Grout: Volclay

Casing:
Type: Sch 40 PVC
Diameter: 2"

Couplings:
Type: Threaded
Number: 2
Depths: 3, 13'

Type of Plug: NA

Gravel Pack:
Material: 20/30 Si

Screen:
Type: Sch 40 PVC
Diameter: 2"
Length: 12½'
Slot Size: 0.010"

Bore Hole Diameter: 8"

NOT TO SCALE

25-2

Wright Army Airfield Fort Stewart, Savannah, GA	Log of Boring No. WMW-6	Sheet No. 1 of 1

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/6/92
Project Number:	3912015G	Boring Completed:	3/6/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	2 inch
Logged By:	G. Foster	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION	Dynamic Pentration Resistance Blows/ft × 8 16 24 32 / PID (ppm) □ 100 200 300 400
		CS	3.5	0				(SM) SAND, silty, medium brown grading to pale yellow, fine-grained, moist	
								3 ft - becomes wet	
	5	CS	3.0	0				(CL) CLAY, sandy, orange, gray, and red mottled grading to red, moist	
								7 ft - becomes red with thin gray sand seams (clay is moist and sand is wet)	
	10	CS	3.3	0				(SC-SM) SAND, interbedded clayey sand and silty sand, fine- to medium-grained, orange, red, and gray mottled, wet	
	15							BORING TERMINATED AT 15.5 FT BGS	

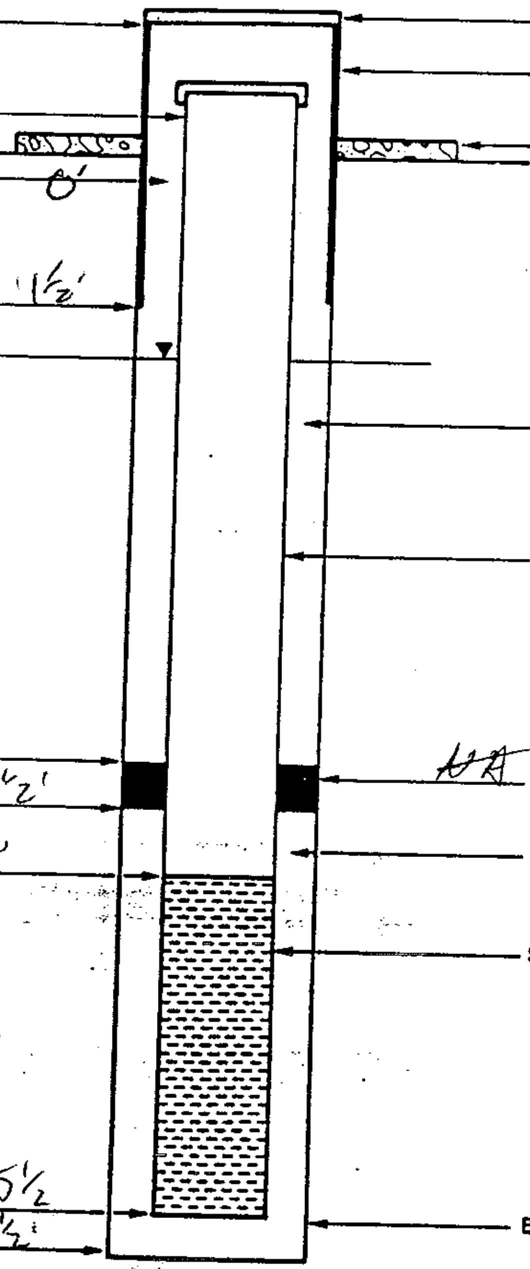
SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92 ESE

MONITOR WELL CONSTRUCTION

Logged By: G. Foster
Drilling Contractor: Layne-Ht
Driller's Name: David Nichols
Well Number: MW (5-3) WMW6
Client: USACE
Location: Hunter AAF FTA, Ft Ste
Job Number:
Date/Time: Start 3/6/92 Finish 3/6/92
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing

Locking Cap

Protective Pipe Type, Diameter: Steel, 4"

Top of Well Casing

Cement/Gravel Pad

Top of ~~Cement~~ Grout: 0'

Bottom of Protective Casing: 1½'

Ground Water

Type of Grout: Volclay

Casing:
Type: Sch 40 PVC
Diameter: 2"

Couplings:
Type: Threaded
Number: 2
Depths: 3, 13'

Top of Bentonite Seal

Type of Plug: ~~NA~~ NA

Top of Gravel Pack: 1½'

Top of Screen: 3'

Gravel Pack:
Material: 20/30 Si

Screen:
Type: Sch 40 PVC
Diameter: 2"
Length: 12½'
Slot Size: 0.010"

Bottom of Screen: 15½

Total Depth of Bore Hole: 15½'

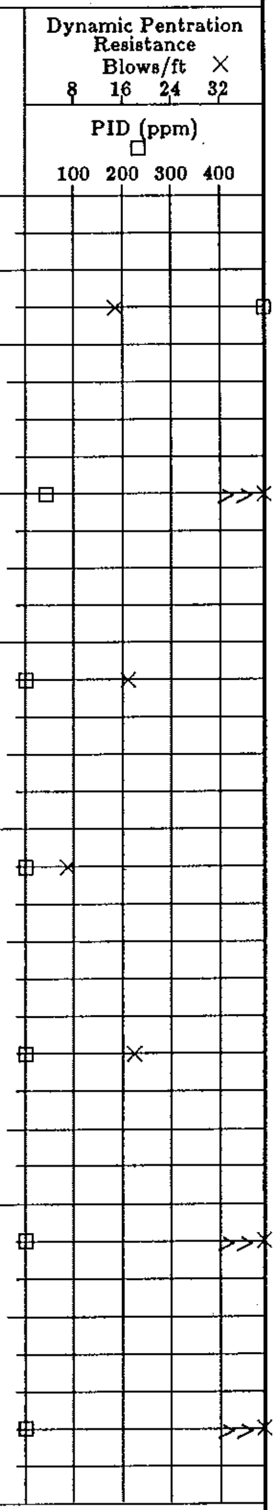
Bore Hole Diameter: 8"

NOT TO SCALE

Wright Army Airfield Fort Stewart, Savannah, GA	Log of Boring No. WMW-7	Sheet No. 1 of 2

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/5/92
Project Number:	3912015G	Boring Completed:	3/5/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	2 inch
Logged By:	G. Foster	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
								(SM) SAND, silty, yellow-brown, fine-grained, moist
								(SC) SAND, clayey, brown, fine-grained, wet
		SS	2.0	500	3-4 11-34			
	5							(CL) CLAY, sandy, orange, red, and gray mottled grading to red, moist
		SS	2.0	45	18-25 25-32			(CL-SM) CLAY AND SAND, interbedded sandy clay (moist) and silty sand (fine- to medium-grained, wet), orange, red, and gray mottled
	10							
		SS	2.0	0	8-9 8-11			(SP) SAND, orange to yellow, fine- to coarse-grained, wet, with trace gravel
	15							
		SS	2.0	0	2-1 6-13			(SP-SM) SAND, interbedded clean sand (fine- to coarse-grained, trace clay and gravel) and silty sand (white to pale yellow, fine-grained), wet
	20							
		SS	2.0	0	7-9 9-10			23 ft - SP coarsens, SC becomes micaceous and white to pale green-gray
	25							
		SS	2.0	0	15-29 34-50/5"			(SM) SAND, silty, medium dark green-gray, fine-grained with lenses of fine- to coarse-grained, moist, slightly clayey in places
	30							
		SS	2.0	0	22-31 32-50			33 ft - with trace gravel in coarse sand lenses



SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

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Wright Army Airfield Fort Stewart, Savannah, GA	Log of Boring No. WMW-7	Sheet No. 2 of 2

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/5/92
Project Number:	3912015G	Boring Completed:	3/5/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	2 inch
Logged By:	G. Foster	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
		SS	2.0	0	28-50 50/4"			
	40							
		SS	2.0	0	25-27 35-50/4"			
	45							
		SS	2.0	0	41-35 50/4"			
	50							
		SS	2.0	0	19-22 50/2"			
	55							BORING TERMINATED AT 55 FT BGS

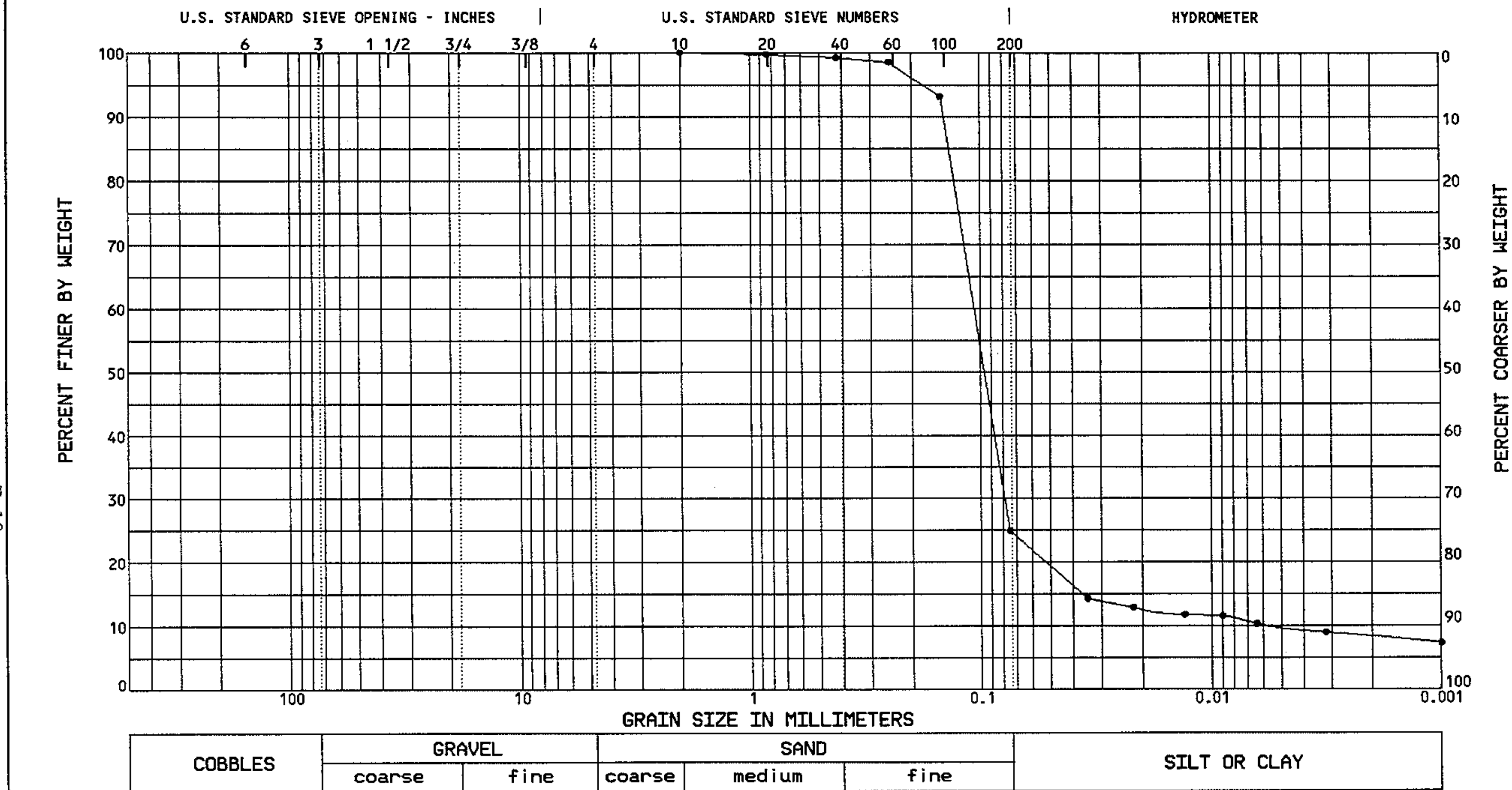
Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

PID (ppm) □
100 200 300 400

SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92 ESE

3/24/92gnszese\



Specimen Identification	Classification				WC%	LL	PL	PI	Cc	Cu
Point ID WMW-7 Depth 40.0 ft										
	D100	D60	D30	D10	%Gravel	%Sand		%Silt	%Clay	
	2.00	0.11	0.079	0.0055	0	75		15	10	

Wright Army Airfield
Fort Stewart, Savannah, GA
Project No: 3912015G

GRAIN SIZE DISTRIBUTION CURVE

Environmental Science and Engineering
Gainesville, Florida
March 19, 1992

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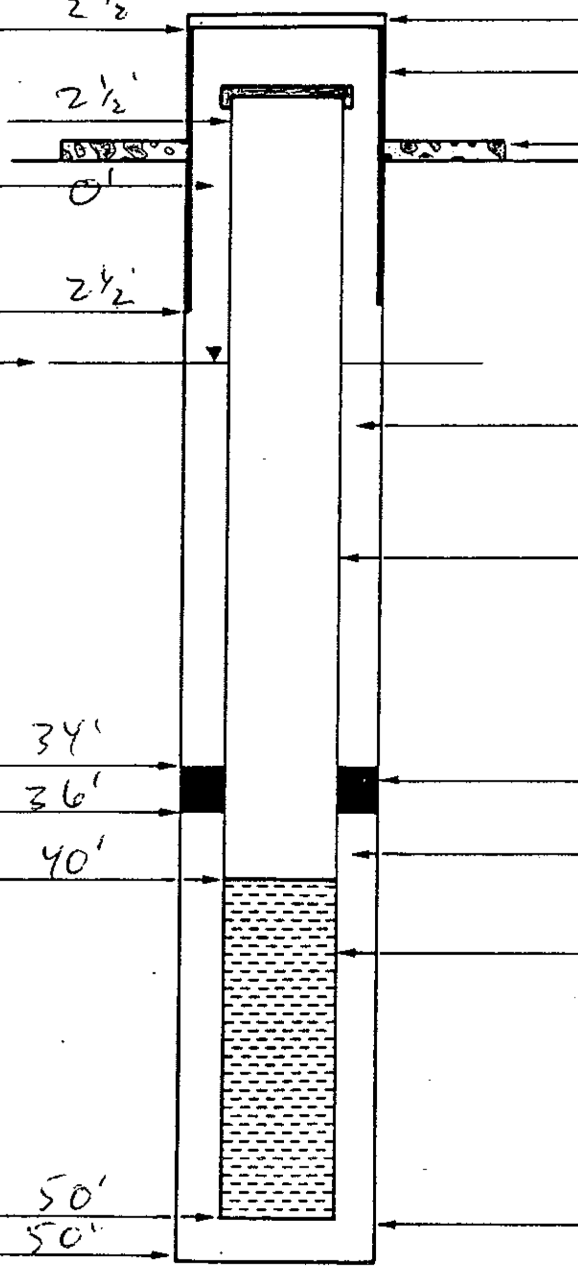
AAAP 10/4/85

MONITOR WELL CONSTRUCTION

Logged By: George Foster
Drilling Contractor: Layne-A+J
Driller's Name: Daniel Michael
Well Number: D-1 (WMW-7)
Client: USACE
Location: Wright AAF, FTA, Ft. Stewart
Job Number:
Date/Time: Start 3/5/92 Finish 3/9/92
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing: 2 ½'
Top of Well Casing: 2 ½'
Top of Cement: 0'
Bottom of Protective Casing: 2 ½'
Ground Water
Top of Bentonite Seal: 34'
Top of Gravel Pack: 36'
Top of Screen: 40'
Bottom of Screen: 50'
Total Depth of Bore Hole: 50'

Locking Cap
Protective Pipe Type, Diameter: 4" steel
Cement/Gravel Pad
Type of Grout: neat cement
Casing:
Type: Sch 40 PVC
Diameter: 2"
Couplings:
Type: Threaded
Number: 5
Depths: 0, 10, 20, 30, 40'
Type of Plug: Volclay
Gravel Pack:
Material: 20/30 Si sand
Screen:
Type: Sch 40 PVC
Diameter: 2"
Length: 10'
Slot Size: 0.010"
Bore Hole Diameter: 8"

NOT TO SCALE

Wright Army Airfield Fort Stewart, Savannah, GA	Log of Boring No. WSB-1	Sheet No. 1 of 1

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/9/92
Project Number:	3912015G	Boring Completed:	3/9/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	N/A inch
Logged By:	M. Bagel	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION	Dynamic Pentration Resistance Blows/ft × (8, 16, 24, 32); PID (ppm) □ (100, 200, 300, 400)
	0	CS	3.0	3				(SC) SAND, clayey, red-brown, fine-grained, with scattered irregular clay and sand pockets, moist 0 to 3 ft - Sample WRITS1*1 collected	
								(CL) CLAY, silty, sandy, red-brown and gray mottled, moist	
	5	SS	1.7	0	9-14 16-24			(SC) SAND, clayey, red-brown and gray mottled, fine-grained, dense, moist 5 to 7 ft - Sample WRITS1*2 collected	
		SS	1.5	0	9-11 26-24			8 to 10 ft - Sample WRITS1*3 collected	
	10							BORING TERMINATED AT 10 FT BGS	

SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92 ESE

Wright Army Airfield Fort Stewart, Savannah, GA	Log of Boring No. WSB-2	Sheet No. 1 of 1

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/10/92
Project Number:	3912015G	Boring Completed:	3/10/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	N/A inch
Logged By:	M. Bagel	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION	Dynamic Pentration Resistance Blows/ft × (8 16 24 32) / PID (ppm) □ (100 200 300 400)
	0	CS	2.3	0				(SM) SAND, silty, brown, fine-grained, moist 0 to 2 ft - Samples WRITS1*4 and WRTS1*11 collected	
								(SC) SAND, clayey, brown and gray mottled, moist	
	5	SS	0.0	0	12-14 20-20			5 ft - becomes red-brown and gray mottled, dense, with occasional clay pockets 5 to 7 ft - Sample WRITS1*5 collected	
		SS	1.5	0	16-16 24-25			8 to 10 ft - Sample WRITS1*6 collected	
	10							BORING TERMINATED AT 10 FT BGS	

SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92 **ESE**

Wright Army Airfield
Fort Stewart, Savannah, GA

Log of Boring No. WSB-3

Sheet No. 1 of 1

Client:	US Army Corps of Engineers, Kansas City Division	Boring Started:	3/10/92
Project Number:	3912015G	Boring Completed:	3/10/92
Drilling Contractor:	Layne Environmental Services	Boring Diameter:	8 inch
Driller:	D. Nichols	Well Casing Diameter:	N/A inch
Logged By:	M. Bagel	Type of Drill Rig:	Mobile B-57
Location:		Drilling Method:	Hollow Stem Auger

Elevation	Depth	Samp Type	Samp Rec ft	PID ppm	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
		CS	4.6	0				(SM) SAND, silty, brown, fine-grained, moist 0 to 2 ft - Samples WRITS1*7 and WRITS1*10 collected 3.5 ft - grades to red-brown and becomes clayey 4 to 4.3 ft - sandy clay lens
	5	SS	1.7	100	11-12 11-24			(SC) SAND, clayey, red-brown and gray mottled, fine-grained, medium dense, with occasional clay lenses 5 to 7 ft - Sample WRITS1*8 collected
		SS	1.9	2000+	8-8 12-13			8 to 10 ft - Sample WRITS1*9 collected
	10							BORING TERMINATED AT 10 FT BGS

Dynamic Pentration Resistance Blows/ft × : 8 16 24 32

PID (ppm) □ : 100 200 300 400

SS = Splitspoon CS = CMS Continous Sampler PID = Photoionization Detector (HNu)

5/4/92 ESE

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APPENDIX G

WELL DEVELOPMENT RECORD FORMS

D-ECSWVOW.2/FIELDFORM.1
10/22/84

MONITOR WELL DEVELOPMENT

Sheet _____ of ____

Site: WRIGHT AAF Well Designation: WMW-4 ~~MDV-52~~ Installation Date: 3/8/92

Well construction details from boring log:

Total depth (top of casing): 17.6 Screened interval: TOC 3-12.6 Borehole diameter: 8"

Water losses during drilling: _____ Fluid purging: _____

Height of well casing (ground surface): 2' Well diameter: 2"

Standing water: Well casing/screen: 11.68 X 0.1632 = 1.90

(From Chart) Annulus (volume x 30%): 11.68 X 0.73 8.52

10.42 X 5 = 52.13

Date and time of development: _____

Method of development (pump/bailer): CENT pump Pumping rate: 5 gpm

Depth(s) of pumping and elapsed time at each depth: BOTTOM 2MIN

≈15' 2MIN,

SURGED SCREEN AFTER EVERY 10 gAL REMOVED STARTING WITH

TOP 3'. PUMP RATE DROPPED AFTER SURGING TO 3 gpm

Water level Before development: 5.92 During: 14' 24 HR After: _____

Well depth (sounded) Before: 17.3 After: _____

Physical appearance of water (clarity, color, particulates, odor)

Initial: ORANGE, SILTY, SANDY

During development: LITE ORANGE

Final: CLOUDY

Field analysis	Initial	During (2)		Final
Time	1115	1325	1515	1530
Conductivity	101	50	42	40
pH	4.1	4.1	4.1	4.2
Temperature	20.9	19.5	19.8	19.5

Quantity of water removed/time for removal (both incremental and total)

72 gAL

Collect a 1-pint sample of last water removed. _____

Comments: _____

Signed [signature] Date 3/8/92 [signature] 3/8/92

D-ECSWVOW.2/FIELDFORM.1
10/22/84

MONITOR WELL DEVELOPMENT

Sheet ____ of ____

WMW-5

Site: WRIGHT AAF

Well Designation: MW-5S

Installation Date: 3/8/92

Well construction details from boring log:

Total depth (top of casing): ____

Screened interval: ____

Borehole diameter: ____

Water losses during drilling: 17.3

Fluid purging: ____

Height of well casing (ground surface): 2'

Well diameter: 2"

Standing water: Well casing/screen: 10.26 X 0.1632 = 1.67

(From Chart) Annulus (volume x 30%): 10.26 X .73 = 8.71 7.49 RG

9.16 ~~10.58~~ X 5 = ~~52.9~~ 45.80

Date and time of development: ____

Method of development (pump/bailer): CENT. PUMP Pumping rate: PUMP DRY

Depth(s) of pumping and elapsed time at each depth: BOTTOM 30 SEC

SURGED WELL AFTER EACH PURGE & RECHARGE

Water level Before development: 7.04 During: ____ 24 HR After: ____

Well depth (sounded) Before: 17.3 After: ____

Physical appearance of water (clarity, color, particulates, odor)

Initial: ORANGE SILTY

During development: LITE ORANGE TO ORANGE SILTY

Final: ~~OR~~ LT. ORANGE CLOUDY

Field analysis	Initial	During (2)			Final
Time	1545	1645	1730	1930	1845
Conductivity	75	52	36	38	37
pH	4.1	4.2	4.3	4.2	4.2
Temperature	23.1	23.1	23.6	23.5	23.7

Quantity of water removed/time for removal (both incremental and total)

80 GAL

Collect a 1-pint sample of last water removed. ____

Comments: RECHARGED 100% 3.5 MIN

[signature] 3/8/92
Signed Date

[signature] 3/8/92
Approved Date

D-ECSWVOW.2/FIELDFORM.1
10/22/84

MONITOR WELL DEVELOPMENT

Sheet 1 of 1

Site: WRIGHT AAF   Well Designation: WMW-6 MW-53   Installation Date: 3/8/92

Well construction details from boring log:

Total depth (top of casing): 17.6'   Screened interval: TOC 5'-17.6   Borehole diameter: 8"

Water losses during drilling: ____   Fluid purging: ____

Height of well casing (ground surface): 2'   Well diameter: 2"

Standing water: Well casing/screen: 10.72 X 0.1632 = 1.75

(From Chart) Annulus (volume x 30%): 10.72 X ~~7.8~~ 0.73 = 7.82

9.57 X 5 = 47.87

Date and time of development: 3/8/92

Method of development (pump/bailer): CENT PUMP   Pumping rate: PUMP DRY

Depth(s) of pumping and elapsed time at each depth: BOTTOM 30 SEC

SURGING AFTER EACH PURGE FOR 15 MIN.

Water level   Before development: 6.88   During: ____   24 HR After: ____

Well depth (sounded)   Before: 17.3   After: ____

Physical appearance of water (clarity, color, particulates, odor)

Initial: ORANGE, SILTY SANDY

During development: LITE ORANGE TO ORANGE SILTY

Final: LITE ORANGE

Field analysis	Initial	During (2)		Final
Time	0700	0900	1000	1100
Conductivity	116	33	29	28
pH	5.5	4.6	4.3	4.3
Temperature	19.1	22.2	22.1	22.2

Quantity of water removed/time for removal (both incremental and total)

60 gal

Collect a 1-pint sample of last water removed. ____

Comments: WELL RECHARGED 100% 3 MIN.

Signed [signature] Date 3/8/92   Approved [signature] Date 3/8/92

D-ECSWVOW.2/FIELDFORM.1
10/22/84

MONITOR WELL DEVELOPMENT

Sheet ____ of ____

WMW-7

Site: WRIGHT AAF Well Designation: D-1 Installation Date: 3/9/92

Well construction details from boring log:

Total depth (top of casing): 53 Screened interval: TOC 40.5'-53' Borehole diameter: 8"

Water losses during drilling: ________ Fluid purging: ________

Height of well casing (ground surface): 2 Well diameter: 2"

Standing water: Well casing/screen: 46.03 X 0.1632 = 7.51 ✓

(From Chart) Annulus (volume x 30%): 15 X 0.73 = 10.95 ✓

18.46 X 5 92.3 ✓

Date and time of development: 3/10/92

Method of development (pump/bailer): BK PUMP Pumping rate: ________

Depth(s) of pumping and elapsed time at each depth: BOTTOM

Water level Before development: 6.97 During: ______ 24 HR After: ______

Well depth (sounded) Before: TOC ~~53.3~~ 53 After: ________

Physical appearance of water (clarity, color, particulates, odor)

Initial: CLOUDY GREY SILTY

During development: GREY SILTY

Final: LT GREY SILTY

Field analysis	3-10-92 Initial	3-11-92 During (2)				Final		
Time	1600	0800	0835	0855	0915	9:30	1000	
Conductivity	378	322	270	338	320	300	306	
pH	8.5	5.5	5.6	5.8	6.0	6.3	6.0	OVER
Temperature	26.2	22.2	20.9	20.4	20.2	20.4	21.8	

Quantity of water removed/time for removal (both incremental and total)

100 GAL

Collect a 1-pint sample of last water removed. ________

Comments: WELL PURGED DRY 12-15 GAL

Signed [signature] 3/10/92 3/11/92 Date Approved [signature] 5/8/92 Date

WMW-7 (CONT.)

TIME	1020	1100	1120	1300	1325
COND	280	257	257	275	319
Ph.	6.0	6.0	5.8	5.9	6.1
TEMP	21.3	21.3	21.0	21.6	21.0

MONITOR WELL DEVELOPMENT

Sheet ____ of ____

Site: WRIGHT AAPTA Well Designation: WMW-4 Installation Date: ________

Well construction details from boring log:

Total depth (top of casing): 17.6 Screened interval: ~~8~~-17.6 Borehole diameter: 8"

Water losses during drilling: ________ Fluid purging: ________

Height of well casing (ground surface): 2' Well diameter: 2"

Standing water: Well casing/screen: (17.6 - 4.85) × 0.1632 = 2.1

(From Chart) Annulus (volume x 30%): (17.6 - 4.85) × 0.73 = 9.3

1 well vol = 11.4 gal - ~~30~~ 3 well vol = 34.2 gal

Date and time of development: 1/15/93 1330

Method of development (pump/bailer): Grundfos Pump Pumping rate: ________

Depth(s) of pumping and elapsed time at each depth: ________

Across Screen Zone

Water level Before development: 4.85 During: ______ 24 HR After: ______

Well depth (sounded) Before: 17.76 After: 17.77

Physical appearance of water (clarity, color, particulates, odor)

Initial: LT Orange - Sl. TURBID - TURBID, Trace silt

During development: Clear, No Sand or silt

Final: clear, no Sand or silt

Field analysis	Initial	During (2)		Final
Time	1332	1340	1346	1354
Conductivity	48	42	42	43
pH	4.2	4.1	4.1	4.1
Temperature	18.9	18.9	19.1	19.1
	0	12	25	34

Quantity of water removed/time for removal (both incremental and total)

Collect a 1-pint sample of last water removed. yes

Comments: ________

Mark H [illegible] 1/15/93

Signed Date Approved Date

MONITOR WELL DEVELOPMENT

Sheet _____ of _____

Site: WRIGHT AAFTA Well Designation: WMW-5 Installation Date: __________

Well construction details from boring log:

Total depth (top of casing): 17.5 Screened interval: 7-17.5 Borehole diameter: 8"

Water losses during drilling: N/A Fluid purging: __________

Height of well casing (ground surface): ______ Well diameter: ____

Standing water: Well casing/screen: (17.5-5.88) x 0.1632 = 1.9

(From Chart) Annulus (volume x 30%): (17.5-5.88) x 0.73 = 8.5

1 well vol = 10.4 gal. 3 well volumes = 31.2 gal

Date and time of development: 1/15/93

Method of development (pump/bailer): Grundfos pump Pumping rate: ______

Depth(s) of pumping and elapsed time at each depth: __________

Across Screen Zone

Water level Before development: 5.88 During: ______ 24 HR After: ____

Well depth (sounded) Before: 17.77 After: 17.77

Physical appearance of water (clarity, color, particulates, odor)

Initial: clear, trace silt, colorless

During development: clear, no sand or silt

Final: clear, no sand or silt

Field analysis	Initial		During (2)		Final
Time	1250	1304	1310	1317	1320
Conductivity	63	43	40	40	40
pH	4.8	4.4	4.3	4.3	4.3
Temperature	21.9	21.6	21.7	21.7	21.7
Cum. Gallons	0	11	22	30	33

Quantity of water removed/time for removal (both incremental and total)

Collect a 1-pint sample of last water removed. ________

Comments: __________

Signed [signature] Date 1/15/93 Approved ________ Date

MONITOR WELL DEVELOPMENT

Sheet ____ of ____

Site: WRIGHT ARPTA Well Designation: WMW-6 Installation Date: ____

Well construction details from boring log:

Total depth (top of casing): TOC 17.6 Screened interval: BTOC 7.6-17.6 Borehole diameter: 8"

Water losses during drilling: N/A Fluid purging: N/A

Height of well casing (ground surface): 2' Well diameter: 2"

Standing water: Well casing/screen: (17.6 - 5.66) x 0.1632 = 1.95

(From Chart) Annulus (volume x 30%): (17.6 - 5.66) x 0.73 = 8.72

1 well volume = 10.67 gal - 3 well volumes = 32.01 gal

Date and time of development: 1/15/93

Method of development (pump/bailer): Grundfos pump Pumping rate: ____

Depth(s) of pumping and elapsed time at each depth: ____

Across screen zone

Water level Before development: 5.66 During: ____ 24 HR After: ____

Well depth (sounded) Before: 17.80 After: 17.80

Physical appearance of water (clarity, color, particulates, odor)

Initial: Orange-turbid, silty, no sand

During development: Clear, no sand or silt

Final: Clear, no sand or silt

Field analysis	Initial	During (2)		Final
Time	1410	1416	1430	1434
Conductivity	29	26	24	25
pH	4.0	4.1	4.1	4.1
Temperature	20.4	21.2	21.2	21.2
Gallons	0	10	30	35

Quantity of water removed/time for removal (both incremental and total)

Purged 35 gal in 24 min.

Collect a 1-pint sample of last water removed. yes

Comments: ____

Mark G [signature] 1/15/93

Signed Date Approved Date

MONITOR WELL DEVELOPMENT

Sheet _____ of _____

Site: WRIGHT AAPTA WMW-7　　Well Designation: WMW-7　　Installation Date: __________

Well construction details from boring log:

Total depth (top of casing): 53　　Screened interval: 40.0-50.0　　Borehole diameter: 8"

Water losses during drilling: N/P　　Fluid purging: ?

Height of well casing (ground surface): 2'　　Well diameter: 2"

Standing water: Well casing/screen: (50-5.88) x 0.1632 = 7.5

(From Chart) Annulus (volume x 30%): 15.73 = 10.95

1 well volume = 18.3 gal　　3 well volumes = 55 gal.

Date and time of development: 1/13/92

Method of development (pump/bailer): Pump + Surge　　Pumping rate: ______

Depth(s) of pumping and elapsed time at each depth: Pumped + Surged across screen

Water level　　Before development: 5.88 BTOC　　During: 50.0 Dry　　24 HR After: _____

Well depth (sounded)　　Before: 52.6'　　After: 52.6' BTOC

Physical appearance of water (clarity, color, particulates, odor)

Initial: Clear - LT GRAY - V. slightly Turbid - 20 gal. After surging - V. Turbid - Dk gray w/ Fine sand + silt

During development: Dk gray 22 gal - 24 gal - ~~Turbid~~ LT gray 35 gal - well ~~water~~ sl. Turbid LT gray Trace sand

Final: Clear no sand or silt

Field analysis

	Initial	20 gal	22 gal	Resume Purge	40 gal During	4 (2)	50 gal	60 gal Dry	80 Final 1/13/92	1/15/92	
Time	1026	1044	1097	1155	1223	1300	1312	1405	1730	0746	0831
Conductivity	6.1	6.0	DRY	5.9	6.0	5.9	5.9	5.8	5.9	5.8	5.9
pH	357	306		307	316	291	290	288	274	276	275
Temperature	22.1	22.8		23.1	24.1	23.8	23.7	23.7	22.2	19.7	20.0
gallons	0	18.5	20 Begin Surging			42 gal	54 gal	60 gal	80	96	105

See Time L for more Details

See Back

Quantity of water removed/time for removal (both incremental and total)

1/13/92 1026 - 1097 Removed 21 gal of water. well is Dry. 1155-1225 19 gal removed

1300-1312 - 9 gal removed. 1355-1405 Purged 10 gallons. 1620-1640 - purged 18 Gal

1726-1732 Purged 4 gal. | 1/15/92 734-750 Purged 17 gallons. 818-832 - 15 Gallons 9:12-9:.. 953-1006 1012-10:18

Collect a 1-pint sample of last water removed. Yes

Comments: 1049 Began surging. 1149 Stopped Purging. Began placing pump in well

1155 Resume Purging - 1225 - Well purged dry 1230 Resume surging

See back of Page

See back

[signature] 1/15/93

Signed　　Date　　Approved __________ Date

WMW-7
Development

Time	1058	1202
pH	5.8	5.9
SP. COND.	263	285
TEMP.	21.9	21.6
gal	135 gal	155 gal

Pumped from	To	Gal	Cum gal	
1054	11:00	8	138 gal	
1129	11:34	7	145 gal	reduce rate [illegible]
1134	11:47	5	150 gal	
1202	12:07	5	155 gal	

APPENDIX H

WELL SAMPLING RECORD FORMS

WELL SAMPLING DATA FORM

Well Number: WMW-1 Date: 3-1~~1~~ 92 Time: 1400

Boring Diameter: 10" Well Casing Diameter: 2"

Annular Space Length: 11.5 Stickup: 2.5

WATER LEVEL

Held:

Cut:

DTW: 6.43 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 14.5

DTW Top of Casing: 6.43

Column of Water in Well: 8.07

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.17
Column of Water or Length of A.S. (whichever is less)	X	8.07
Volume of Annular Space	=	9.44
Gallons per foot of Casing	=	0.1632
Column of Water	X	8.07
Volume of Casing	=	1.32
Total Volume (Volume of A.S. + Volume of Casing)	=	10.76
Number of Volumes to be Evacuated	X	3
Total Volume to be Evacuated	=	32.27

Method of Purging (pump, bailer, etc.): Centrifugal pump

FIELD ANALYSES

	Start	Mid	End	
Time	1400	1404	1410	1413
pH	5.7	5.1	4.7	4.4
Conductivity	50	41	40	40
Temperature	17.0	17.4	17.7	17.9

Total Volume Purged: 35.0 gallons 2.5 gal/min

Sample Date/Time: 3-11-92 \ 1515 Sample Number: WRITW1*2-

FRACTIONS

VP X4	V	N	NF	C	O	S	UP	Z	B	MSX3
CF	F	H	CL	M	P	R	RP	T	RS	

Signed/Sampler: [signature] Date: 3/11/92

Signed/Reviewer: R Pisigan Jr. Date: 3/18/92

WELL SAMPLING DATA FORM

Well Number: WMW-2 Date: 3/11/92 Time: 1425

Boring Diameter: 10" Well Casing Diameter: 2"

Annular Space Length: 11 Stickup: 2.5

WATER LEVEL

Held:

Cut:

DTW: 6.37 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.5

DTW Top of Casing: 6.37

Column of Water in Well: 9.13

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	= 1.17
Column of Water or Length of A.S. (whichever is less)	x 9.13
Volume of Annular Space	= 10.68
Gallons per foot of Casing	= 0.1632
Column of Water	x 9.13
Volume of Casing	= 1.49
Total Volume (Volume of A.S. + Volume of Casing)	= 12.17
Number of Volumes to be Evacuated	x 3
Total Volume to be Evacuated	= 36.5

Method of Purging (pump, bailer, etc.): Centrifugal pump

FIELD ANALYSES

	Start	Mid	End
Time	1425	1427	1430
pH	4.7	4.5	4.4
Conductivity	49	41	38
Temperature	19.2	18.4	18.8

Total Volume Purged: 40 gallons 8.0 gal/min

Sample Date/Time: 1530 Sample Number: WRITW1#2 [illegible]

FRACTIONS

VP X4	V	N	NF	C	O	S	UP	Z	B
CF	F	H	CL	MS X3	P	R	RP	T	RS

Signed/Sampler: [signature] Date: 3/11/92

Signed/Reviewer: R Pisigan Jr Date: 5/18/92

WELL SAMPLING DATA FORM

Well Number: WMW-3 Date: 3/11/92 Time: 1440

Boring Diameter: 10' Well Casing Diameter: 2"

Annular Space Length: 10.5 Stickup: 2.5

WATER LEVEL

Held:

Cut:

DTW: 7.29 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.5

DTW Top of Casing: 7.29

Column of Water in Well: 8.21

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.17
Column of Water or Length of A.S. (whichever is less)	X	8.21
Volume of Annular Space	=	9.6
Gallons per foot of Casing	=	0.1632
Column of Water	X	8.21
Volume of Casing	=	1.34
Total Volume (Volume of A.S. + Volume of Casing)	=	10.94
Number of Volumes to be Evacuated	X	3
Total Volume to be Evacuated	=	32.8

Method of Purging (pump, bailer, etc.): CENT. PUMP

FIELD ANALYSES

	Start	Mid	End
Time	1440	1455	1510
pH	4.5	4.6	4.4
Conductivity	32	28	28
Temperature	18.5	20.0	21.0

Total Volume Purged: 34 gallons 1.5gpm

Sample Date/Time: 1545 Sample Number: WRITW/#3

FRACTIONS

VP X4	V	N	NF	C	O	S	UP	Z	B
CF	F	H	CL	MS X3	P	R	RP	T	RS

Signed/Sampler: [signature] Date: 3/11/92

Signed/Reviewer: R. Pisigan Jr. Date: 3/18/92

WELL SAMPLING DATA FORM

Well Number: WMW-4 Date: 3-13-92 Time: 0925

Boring Diameter: 8 Well Casing Diameter: 2''

Annular Space Length: 15' Stickup: 2.0

WATER LEVEL

Held:

Cut:

DTW: 5.95 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.1

DTW Top of Casing: 5.95

Column of Water in Well: 12.15

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	= ~~1.17~~ TDR 0.73
Column of Water or Length of A.S. (whichever is less)	x 12.15
Volume of Annular Space	= 8.87
Gallons per foot of Casing	= 0.1632
Column of Water	x 12.15
Volume of Casing	= 1.98
Total Volume (Volume of A.S. + Volume of Casing)	= 10.85
Number of Volumes to be Evacuated	x 3
Total Volume to be Evacuated	= 32.55

Method of Purging (pump, bailer, etc.): Centrifugal pump

FIELD ANALYSES

	Start	Mid	End
Time	0925	0930	0935
pH	4.5	4.2	4.2
Conductivity	41	38	35
Temperature	18.5	18.3	18.3

Total Volume Purged: 35 gallons

Sample Date/Time: 0940 Sample Number: WRITW1#4

DUP SLT (WRITW1#9) 3.5 gpm

FRACTIONS

VP x4 V N (WRITW1#8) NF C O S UP Z B

CF F H CL MS X3 P R RP T RS

Signed/Sampler: [signature] Date: 3/13/92

Signed/Reviewer: R. Pergan Jr Date: 3/18/92

WELL SAMPLING DATA FORM

Well Number: WMW-5 Date: 3-13-92 Time: 1025

Boring Diameter: 8" Well Casing Diameter: 2"

Annular Space Length: 15 Stickup: 2'

WATER LEVEL

Held:

Cut:

DTW: 7.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.1

DTW Top of Casing: 7.0

Column of Water in Well: 11.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	= 0.73
Column of Water or Length of A.S. (whichever is less)	X 11.1
Volume of Annular Space	= 8.1
Gallons per foot of Casing	= 0.1632
Column of Water	X 11.1
Volume of Casing	= 1.81
Total Volume (Volume of A.S. + Volume of Casing)	= 9.9
Number of Volumes to be Evacuated	X 3
Total Volume to be Evacuated	= 29.73

Method of Purging (pump, bailer, etc.): Centrifugal pump

FIELD ANALYSES

	Start	Mid	End
Time	1025	1030	1035
pH	4.5	4.2	4.1
Conductivity	42	31	31
Temperature	20.5	20.9	20.9

Total Volume Purged: 30 gallons 3 gpm

Sample Date/Time: 1040 Sample Number: WRITW1 # 5

FRACTIONS

VP x24	V	N	NF	C	O	S	UP	Z	B
CF	F	H	CL	MS x3	P	R	RP	T	RS

Signed/Sampler: Thomas D. [illegible] Date: 3/13/92

Signed/Reviewer: R. Pisigano Jr. Date: 5/5/92

WELL SAMPLING DATA FORM

Well Number: WMW-6 Date: 3-13-92 Time: 0820

Boring Diameter: 8' Well Casing Diameter: 2"

Annular Space Length: 15' Stickup:

WATER LEVEL

Held:

Cut:

DTW: 6.10 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.1

DTW Top of Casing: 6.10

Column of Water in Well: 12

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	~~1.17~~ TDR 0.73
Column of Water or Length of A.S. (whichever is less)	X	12
Volume of Annular Space	=	~~14.04~~ TDR 8.76
Gallons per foot of Casing	=	0.1632
Column of Water	X	12
Volume of Casing	=	1.9
Total Volume (Volume of A.S. + Volume of Casing)	=	~~15.99~~ TDR 10.66
Number of Volumes to be Evacuated	X	3
Total Volume to be Evacuated	=	~~47.99~~ 31.98

Method of Purging (pump, bailer, etc.): Centrifugal pump

FIELD ANALYSES

	Start	Mid	End
Time	0920	0830	0835
pH	5.5	4.5	4.3
Conductivity	52	30	26
Temperature	18.0	20.4	20.6

Total Volume Purged: 48 gallons 3.5 gpm

Sample Date/Time: 0845 Sample Number: WRITW1 #6

FRACTIONS

VB X4	V	N	NF	C	O	S	UP	Z	B
CF	F	H	CL	MS X3	P	R	RP	T	RS

Signed/Sampler: [signature] Date: 3/13/92

Signed/Reviewer: RP Pisigan Jr Date: 5/18/92

VAM

WELL SAMPLING DATA FORM

Well Number: WMW-7 Date: 3-14-92 Time: 0215

Boring Diameter: 8 Well Casing Diameter: 2"

Annular Space Length: 15' Stickup: 2'

WATER LEVEL

Held:

Cut:

DTW: 6.92 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 53

DTW Top of Casing: 6.92

Column of Water in Well: 46.08

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.73
Column of Water or Length of A.S. (whichever is less)	X	15
Volume of Annular Space	=	10.95
Gallons per foot of Casing	=	0.1632
Column of Water	X	46.08
Volume of Casing	=	7.52
Total Volume (Volume of A.S. + Volume of Casing)	=	18.47
Number of Volumes to be Evacuated	X	3
Total Volume to be Evacuated	=	55.41

Method of Purging (pump, bailer, etc.): Bailer ~~Centrifugal pump~~ TDR

FIELD ANALYSES

	Start	16 GAL Mid	22 GAL	34 GAL End
Time	0715	0745	0835	0915
pH	5.7	5.8	5.9	6.1
Conductivity	305	270	330	327
Temperature	20.0	21.3	21.4	21.9

Total Volume Purged: — gallons

Sample Date/Time: 0945 3/14/92 Sample Number: WRITW1X7

FRACTIONS

VP x4	V	N	NF	C	O	S	UP	Z	B
CF	F	H	CL	MS x3	P	R	RP	T	RS

BAILED DRY 3X

Signed/Sampler: [signature] Date: 3/14/92

Signed/Reviewer: R Prsiggh Jr. Date: 3/18/92

WELL SAMPLING DATA FORM

Well Number: WSourco Date: 3-13-92 Time: ______

Boring Diameter: ______ Well Casing Diameter: ______

Annular Space Length: ______ Stickup: ______

WATER LEVEL

Held: ______

Cut: ______

DTW: ______ Top of Casing

COLUMN OF WATER IN WELL

Casing Length: ______

DTW Top of Casing: ______

Column of Water in Well: ______

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	
Column of Water or Length of A.S. (whichever is less)	X	
Volume of Annular Space	=	
Gallons per foot of Casing	=	
Column of Water	X	
Volume of Casing	=	
Total Volume (Volume of A.S. + Volume of Casing)	=	
Number of Volumes to be Evacuated	X	
Total Volume to be Evacuated	=	

Method of Purging (pump, bailer, etc.): ______

FIELD ANALYSES

	Start	Mid	End
Time	1110		
pH	6.3		
Conductivity	229		
Temperature	12.8		

Total Volume Purged: ______ gallons

Sample Date/Time: 1120 Sample Number: WRITW1X10

FRACTIONS

VP X4 V N NF C O S UP Z B

CF F H CL M2X3 P R RP T RS

NO DETECTABLE CLORINE

Signed/Sampler: Thomas D. [signature] Date: 3/13/92

Signed/Reviewer: ______ Date: ______

WELL SAMPLING DATA FORM

Well Number: WMW-7 Date: 1/15/93 Time: 12 00

Boring Diameter: 8" Well Casing Diameter: 2"

Annular Space Length: 15' Stickup:

WATER LEVEL

Held: 5.88

Cut:

DTW: 5.88 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 52

DTW Top of Casing: 5.88

Column of Water in Well: 46.12

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.73
Column of Water or Length of A.S. (whichever is less)	X	~~15~~ ~~9~~ 15'
Volume of Annular Space	=	10.95
Gallons per foot of Casing	=	.1632
Column of Water	X	46.12
Volume of Casing	=	7.5
Total Volume (Volume of A.S. + Volume of Casing)	=	18
Number of Volumes to be Evacuated	X	3
Total Volume to be Evacuated	=	55

Method of Purging (pump, bailer, etc.): Grundfos Pump

FIELD ANALYSES

	Start	Mid	End
Time	1026		
pH	6.1		
Conductivity	357		
Temperature	22.1		

Total Volume Purged: 55 See development log gallons

Sample Date/Time: 1/15/93 1224 Sample Number: FT STEB2 ~~✱~~ 4 sample

21 3 (Duplicate

21 5 Split

FRACTIONS

VP	V	N	NF	C	O	S	UP	Z	B
CF	F	H	CL	M	P	R	RP	T	RS

Signed/Sampler: [signature] Date: 1/10/93

Signed/Reviewer: Date:

APPENDIX I

CHAIN-OF-CUSTODY FORMS

Soil/Sediments

Environmental Science & Engineering 02-24-92 *** FIELD LOGSHEET *** FIELD GROUP: WRITS1
PROJECT NUMBER 3924018G 0201 PROJECT NAME: COE - FT. STEWART LAB COORD. SUZANNE WOODWARD

4/1

ESE #	SITE/STA	HAZ?	FRACTIONS (CIRCLE)	DATE	TIME	PARAMETER LIST	Boring	Depth
*1	WS-1		SS SS SV SV	3/9/92	1630	FTSTWS1	SB-1	0-2
*2	WS-2		SS SS SV SV	3/9/92	1640	FTSTWS1	SB-1	5-7
*3	WS-3		SS SS SV SV	3/9/92	1650	FTSTWS1	SB-1	5-6
*4	WS-4		SS SS SV SV	3/10/92	720	FTSTWS1	SB-2	0-3
*5	WS-5		SS SS SV SV	3/10/92	730	FTSTWS1	SB-2	5
*6	WS-6		SS SS SV SV	3/10/92	740	FTSTWS1	SB-2	[illegible]
*7	WS-7		SS SS SV SV	3/10/92	830	FTSTWS1	SB-3	[illegible]
*8	WS-8		SS SS SV SV	3/10/92	840	FTSTWS1	SB-3	[illegible]
*9	WS-9		SS SS SV SV	3/10/92	850	FTSTWS1	SB-3	[illegible]
*10	WS-DUP		SS SS SV SV	3/10/92	←	FTSTWS1	...	—
*11	WS-SPL		SS SS SV SV			FTSTWS1		
*12	WSD-1		SS SS SV SV	3-10-92	0930	FTSTWS1	5	
*13	WSD-2		SS SS SV SV	3-10-92	0930	FTSTWS1		
*14	WSD-DUP		SS SS SV SV	3-10-92	—	FTSTWS1		
*15	WSD-SPL		SS SS SV SV			FTSTWS1		

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	VIA:	REC'D BY (NAME/ORGANIZATION/DATE/TIME)
1 Thomas D. ROYAL (ESE) / [illegible] (ESE) / 3/10/92 / 1100		V. [illegible] ESE 3-11 1000
2		
3		ESH 3-11-92 17:32

SAMPLER: MORE SAMPLES TO BE SHIPPED? Y IF YES, ANTICIPATED # ___ TO SHIP ON 3/11/92
SAMPLE CUSTODIAN: Custody Seals Intact? ✓ Samples Iced? ✓ Preservations Audited? N Problems? N

Waters

Environmental Science & Engineering 02-24-92 *** FIELD LOGSHEET *** FIELD GROUP: WRITW1
PROJECT NUMBER 3924018G 0201 PROJECT NAME: COE - FT. STEWART LAB COORD. SUZANNE WOODWARD

4/3

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST	pH	COND
*1	WMW-1		MS MS MS N VP VP VP VP	3-11-92	1515	FTSTW1	4.4	40
*2	WMW-2		MS MS MS N VP VP VP VP	3-11-92	1530	FTSTW1	4.4	38
*3	WMW-3		MS MS MS N VP VP VP VP	3-11-92	1545	FTSTW1	4.4	28
*4	WMW-4		MS MS MS N VP VP VP VP			FTSTW1		
*5	WMW-5		MS MS MS N VP VP VP VP			FTSTW1		
*6	WMW-6		MS MS MS N VP VP VP VP			FTSTW1		
*7	WMW-7		MS MS MS N VP VP VP VP			FTSTW1		
*8	WMW-DUP		MS MS MS N VP VP VP VP			FTSTW1		
*9	WMW-SPL		MS MS MS N VP VP VP VP			FTSTW1		
*10	WSOURCE		MS MS MS N VP VP VP VP			FTSTW1		
*11	EQPBLK		MS MS MS N VP VP VP VP			FTSTW1		
*12	EQPSPL		MS MS MS N VP VP VP VP			FTSTW1		

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

I-4

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	VIA:	REC'D BY (NAME/ORGANIZATION/DATE/TIME)
1 [signature] ESE 3-11-92 1800	FEDEX	[signature] ESE 3-12 1500
2		
3		ESH 3-12-92 17:19

SAMPLER: MORE SAMPLES TO BE SHIPPED? YES IF YES, ANTICIPATED # 14 TO SHIP ON 3/12/92
SAMPLE CUSTODIAN: Custody Seals Intact? ✓ Samples Iced? ✓ Preservations Audited? ✓ Problems? ~

286

Environmental Science & Engineering 02-24-92 *** FIELD LOGSHEET *** FIELD GROUP: WRITW1
PROJECT NUMBER 3924018G 0201 PROJECT NAME: COE - FT. STEWART LAB COORD. SUZANNE WOODWARD

4/3 as per JMH

ESE #	SITE/STA	HAZ?	FRACTIONS (CIRCLE)	DATE	TIME	PARAMETER LIST
*13	TRPBLK		VP VP VP VP	3-11-92	1800	FTSTB
*14	TRPBLK		VP VP VP VP			FTSTB
*15	TRPSPL		VP VP VP VP			FTSTB

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	VIA:	REC'D BY (NAME/ORGANIZATION/DATE/TIME)
1	[signature] / ESE 3-11-92 1800	FEDEX	V Pham [illegible] ESE 3-12 1500
2			
3			ESH 3-12-92 17:19

SAMPLER: MORE SAMPLES TO BE SHIPPED? ___ IF YES, ANTICIPATED # ___ TO SHIP ON / /
SAMPLE CUSTODIAN: Custody Seals Intact? Y Samples Iced? Y Preservations Audited? N Problems? N

I-5

Environmental Science & Engineering 02-24-92 *** FIELD LOGSHEET *** FIELD GROUP: WRITW1
PROJECT NUMBER 3924018G 0201 PROJECT NAME: COE - FT. STEWART LAB COORD. SUZANNE WOODWARD

4/3

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST		
*1	WMW-1		MS MS MS N VP VP VP VP			FTSTW1		
*2	WMW-2		MS MS MS N VP VP VP VP			FTSTW1		
*3	WMW-3		MS MS MS N VP VP VP VP			FTSTW1		
*4	WMW-4		~~MS MS MS~~ N ~~VP VP VP VP~~	3-13-92	0940	FTSTW1	4.2	35
*5	WMW-5		~~MS~~ MS MS N VP VP VP VP	3-13-92	1040	FTSTW1	4.1	31
*6	WMW-6		~~MS MS MS~~ N VP VP VP VP	3-13-92	0845	FTSTW1	4.3	26
*7	WMW-7		~~MS MS MS~~ N VP VP VP VP	3-14-92	0945	FTSTW1		
*8	WMW-DUP		~~MS~~ MS MS N VP VP VP VP	3-13-92		FTSTW1		
*9	WMW-SPL		MS MS MS N VP VP VP VP			FTSTW1		
*10	WSOURCE		MS MS MS N VP VP VP VP	3-13-92	—	FTSTW1	6.3	229
*11	EQPBLK		MS MS MS N VP VP VP VP	↓	—	FTSTW1		
*12	EQPSPL		MS MS MS N VP VP VP VP			FTSTW1		

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

I-6

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	VIA:	REC'D BY (NAME/ORGANIZATION/DATE/TIME)
1 [signature] ESE 3-14-92	~~UNDDELIVERX~~	[signature] ESE 3-14 1400
2		
3		

SAMPLER: MORE SAMPLES TO BE SHIPPED? ___ IF YES, ANTICIPATED # ___ TO SHIP ON / /
SAMPLE CUSTODIAN: Custody Seals Intact? Y Samples Iced? Y Preservations Audited? Y Problems? N

Pait 3-15-92

Environmental Science & Engineering 02-24-92 *** FIELD LOGSHEET *** FIELD GROUP: WRITW1
PROJECT NUMBER 3924018G 0201 PROJECT NAME: COE - FT. STEWART LAB COORD. SUZANNE WOODWARD 4/3

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*13	TRPBLK		VP VP VP VP			FTSTB
*14	TRPBLK		VP VP VP VP	3-14-92	—	FTSTB
*15	TRPSPL		VP VP VP VP			FTSTB

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science & Engineering, Inc.

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	VIA:	REC'D BY (NAME/ORGANIZATION/DATE/TIME)
1 [signature] ESE 3/14/92		N P[signature] ESE 3-14 1400
2		
3		

SAMPLER: MORE SAMPLES TO BE SHIPPED? ___ IF YES, ANTICIPATED # ___ TO SHIP ON __/__/__
SAMPLE CUSTODIAN: Custody Seals Intact? Y Samples Iced? Y Preservations Audited? N Problems? N

I-7

Pait 3-15-92

APPENDIX J

ANALYTICAL RESULTS

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1992 RESULTS

Environmental Science & Engineering DATE 04/06/92 STATUS : FINAL PAGE 1
PROJECT NUMBER 3924018G 0201 PROJECT NAME COE - FT. STEWART
FIELD GROUP WRITS1 PROJECT MANAGER S.P. WOODWARD
ALL LAB COORDINATOR SUZANNE WOODWARD

SAMPLE ID'S / PARAMETERS / UNITS	STORET / METHOD	WS-1 WRITS1 1	WS-2 WRITS1 2	WS-3 WRITS1 3	WS-4 WRITS1 4	WS-5 WRITS1 5	WS-6 WRITS1 6	WS-7 WRITS1 7	WS-8 WRITS1 8	WS-9 WRITS1 9	WS-DUP WRITS1 10	WSD-1 WRITS1 12	WSD-2 WRITS1 13	WSD-DUP WRITS1 14
DATE		03/09/92	03/09/92	03/09/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92	03/10/92
TIME		16:30	16:40	16:50	07:20	07:30	07:40	08:30	08:40	08:50		09:30	08:30	
MOISTURE %WET WT	70320 I	14.1	16.3	15.4	9.7	16.5	16.0	14.6	17.2	14.7	10.0	25.1	14.7	15.4
ARSENIC,SED MG/KG-DRY	1003 GFAA	4.12	4.51	3.05	0.755	2.42	0.639	2.37	2.99	0.966	4.12	3.82	3.38	3.31
BARIUM,SED MG/KG- DRY	1008 ICAP	15.4	12.9	10.3	25.9	12.6	11.4	10.0	11.2	9.47	16.0	37.2	13.4	24.7
CADMIUM,SED MG/KG-DRY	1028 ICAP	1.61	<0.546	4.09	0.548	0.770	<0.563	1.64	2.12	0.564	1.96	2.21	0.786	2.26
CHROMIUM,SED MG/KG-DRY	1029 ICAP	15.6	6.14	33.9	5.48	7.59	6.45	11.7	17.7	4.51	16.1	16.8	8.99	19.4
LEAD,SED MG/KG-DRY	1052 ICAP	7.17	12.2	11.7	<6.99	<7.02	<7.48	<6.98	8.35	<7.19	<6.96	15.4	<7.17	7.92
MERCURY,SED MG/KG-DRY	71921 CVAA	<0.102	<0.103	<0.105	<0.098	<0.106	<0.103	<0.103	<0.109	<0.102	<0.097	<0.117	<0.105	<0.103
SELENIUM,SED MG/KG-DRY	1148 GFAA	0.325	0.485	0.318	<0.270	<0.292	<0.291	<0.292	0.387	<0.291	<0.272	<0.326	<0.291	<0.288
SILVER,SED MG/KG-DRY	1078 ICAP	<0.770	<0.819	<0.837	<0.789	<0.792	<0.844	<0.787	<0.846	<0.812	<0.786	<0.885	<0.809	<0.815
ACENAPHTHENE UG/KG-DRY	34208 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	<82	<83
ACENAPHTHYLENE UG/KG-DRY	34203 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	<82	<83
ANTHRACENE UG/KG-DRY	34223 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	120	330
BENZO(A)ANTHRACENE UG/KG-DRY	34529 GMS	<120	<120	<120	<110	<120	<120	<120	<120	<120	<110	1900	2000	2700
BENZO(A)PYRENE UG/KG-DRY	34250 GMS	<160	<170	<170	<160	<170	<170	<160	<170	<160	<160	2800	2200	2700
BENZO(B)FLUORANTHENE UG/KG-DRY	34233 GMS	<120	<120	<120	<110	<120	<120	<120	<120	<120	<110	4200	3700	4700
BENZO(GHI)PERYLENE UG/KG-DRY	34524 GMS	<190	<190	<190	<180	<190	<190	<190	<190	<190	<180	3600	1600	2000
BENZO(K)FLUORANTHENE UG/KG-DRY	34245 GMS	<120	<120	<120	<110	<120	<120	<120	<120	<120	<110	1200	1100	1200
CHRYSENE UG/KG-DRY	34323 GMS	<120	<120	<120	<110	<120	<120	<120	<120	<120	<110	2500	1900	2600
DIBEN(A,H)ANTHRACENE UG/KG-DRY	34559 GMS	<190	<190	<190	<180	<190	<190	<190	<190	<190	<180	<210	320	<190
FLUORANTHENE UG/KG-DRY	34379 GMS	120	<84	<83	<78	<84	<83	100	<85	<82	<78	3400	4600	6200
FLUORENE UG/KG-DRY	34384 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	<82	<83
INDENO(1,2,3-CD) PYRENE UG/KG-DRY	34406 GMS	<190	<190	<190	<180	<190	<190	<190	<190	<190	<180	4000	2000	2200
NAPHTHALENE UG/KG-DRY	34445 GMS	<81	<84	<83	<78	<84	<83	<82	<85	140	<78	<93	<82	<83
PHENANTHRENE UG/KG-DRY	34464 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	760	2100

Environmental Science & Engineering DATE 04/06/92 STATUS : FINAL PAGE 2
PROJECT NUMBER 3924018G 0201 PROJECT NAME COE - FT. STEWART
FIELD GROUP WRITSI PROJECT MANAGER S.P. WOODWARD
ALL LAB COORDINATOR SUZANNE WOODWARD

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	WS-1 WRITSI 1	WS-2 WRITSI 2	WS-3 WRITSI 3	WS-4 WRITSI 4	WS-5 WRITSI 5	WS-6 WRITSI 6	WS-7 WRITSI 7	WS-8 WRITSI 8	WS-9 WRITSI 9	WS-DUP WRITSI 10	WSD-1 WRITSI 12	WSD-2 WRITSI 13	WSD-DUP WRITSI 14
DATE TIME		03/09/92 16:30	03/09/92 16:40	03/09/92 16:50	03/10/92 07:20	03/10/92 07:30	03/10/92 07:40	03/10/92 08:30	03/10/92 08:40	03/10/92 08:50	03/10/92	03/10/92 09:30	03/10/92 08:30	03/10/92
PYRENE UG/KG-DRY	34472 GMS	<81	<84	<83	<78	<84	<83	99	<85	<82	<78	3300	3700	5200
BENZENE UG/KG-DRY	34237 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
BROMODICHLOROMETHANE UG/KG-DRY	34330 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
BROMOFORM UG/KG-DRY	34290 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
BROMOMETHANE UG/KG-DRY	34416 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
METHYL ETHYL KETONE UG/KG-DRY	75078 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
CARBON DISULFIDE UG/KG-DRY	78544 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
CARBON TETRACHLORIDE UG/KG-DRY	34299 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
CHLOROBENZENE UG/KG-DRY	34304 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
DIBROMOCHLOROMETHANE UG/KG-DRY	34309 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
CHLOROETHANE UG/KG-DRY	34314 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
CHLOROFORM UG/KG-DRY	34318 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
2-CHLOROETHYLVINYL-ETHER UG/KG-DRY	34579 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
CHLOROMETHANE UG/KG-DRY	34421 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
1,2-DICHLOROBENZENE UG/KG-DRY	34539 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	<82	<83
1,3-DICHLOROBENZENE UG/KG-DRY	34569 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	<82	<83
1,4-DICHLOROBENZENE UG/KG-DRY	34574 GMS	<81	<84	<83	<78	<84	<83	<82	<85	<82	<78	<93	<82	<83
DICHLOROBENZENE,TOTAL UG/KG-DRY	98578 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
1,1-DICHLOROETHANE UG/KG-DRY	34499 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
1,2-DICHLOROETHANE UG/KG-DRY	34534 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
1,1-DICHLOROETHYLENE UG/KG-DRY	34504 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
1,2-DICHLOROETHENE(TOTAL) UG/KG	96464 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
1,2-DICHLOROPROPANE UG/KG-DRY	34544 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
CIS-1,3-DICHLORO-PROPENE UG/KG-DRY	34702 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	WS-1 WRITSI 1	WS-2 WRITSI 2	WS-3 WRITSI 3	WS-4 WRITSI 4	WS-5 WRITSI 5	WS-6 WRITSI 6	WS-7 WRITSI 7	WS-8 WRITSI 8	WS-9 WRITSI 9	WS-DUP WRITSI 10	WSD-1 WRITSI 12	WSD-2 WRITSI 13	WSD-DUP WRITSI 14
DATE TIME		03/09/92 16:30	03/09/92 16:40	03/09/92 16:50	03/10/92 07:20	03/10/92 07:30	03/10/92 07:40	03/10/92 08:30	03/10/92 08:40	03/10/92 08:50	03/10/92	03/10/92 09:30	03/10/92 08:30	03/10/92
TRANS-1,3-DICHLORO- PROPENE UG/KG-DRY	34697 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
DIETHYL ETHER UG/KG-DRY	97201 GMS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
ETHYLBENZENE UG/KG-DRY	34374 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
METHYLENE CHLORIDE UG/KG-DRY	34426 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
METHYLISOBUTYLKETONE UG/KG-DRY	75169 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
1,1,2,2-TETRACHLORO- ETHANE UG/KG-DRY	34519 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
TETRACHLOROETHENE UG/KG-DRY	34478 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
TOLUENE UG/KG-DRY	34483 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
1,1,1-TRICHL'ETHANE UG/KG-DRY	34509 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
1,1,2-TRICHL'ETHANE UG/KG-DRY	34514 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9
TRICHLOROETHENE UG/KG-DRY	34487 GMS	8.4	<6.0	<5.9	12	<6.0	<6.0	<5.9	7.1	<5.9	<5.6	9.9	40	<5.9
TRICHLOROFLUOROMETHA NE UG/KG-DRY	34491 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	10.0	<5.9
VINYL CHLORIDE UG/KG-DRY	34495 GMS	<12	<12	<12	<11	<12	<12	<12	<12	<12	<11	<13	<12	<12
XYLENE,TOTAL UG/KG-DRY	45510 GMS	<5.8	<6.0	<5.9	<5.5	<6.0	<6.0	<5.9	<6.0	<5.9	<5.6	<6.7	<5.9	<5.9

PROJECT NUMBER 3924018G 0201 PROJECT NAME COE - FT. STEWART
FIELD GROUP WRITW1 PROJECT MANAGER S.P. WOODWARD
ALL LAB COORDINATOR SUZANNE WOODWARD

SAMPLE ID'S / PARAMETERS / UNITS	STORET / METHOD	WMW-1 WRITW1 1	WMW-2 WRITW1 2	WMW-3 WRITW1 3	WMW-4 WRITW1 4	WMW-5 WRITW1 5	WMW-6 WRITW1 6	WMW-7 WRITW1 7	WMW-DUP WRITW1 8	WSOURCE WRITW1 10	EQPBLK WRITW1 11	TRPBLK WRITW1 13	TRPBLK WRITW1 14
DATE		03/11/92	03/11/92	03/11/92	03/13/92	03/13/92	03/13/92	03/14/92	03/13/92	03/13/92	03/13/92	03/11/92	03/14/92
TIME		15:15	15:30	15:45	09:40	10:40	08:45	09:45				18:00	
ARSENIC,TOTAL UG/L	1002 GFAA	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	3.7	<2.3	<2.3	<2.3	NRQ	NRQ
BARIUM,TOTAL UG/L	1007 ICAP	36.0	15.2	20.4	61.9	23.9	33.8	129	58.2	7.3	<1.1	NRQ	NRQ
CADMIUM,TOTAL UG/L	1027 ICAP	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	NRQ	NRQ
CHROMIUM,TOTAL UG/L	1034 ICAP	<7.4	<7.4	<7.4	13.6	<7.4	<7.4	16.7	9.2	<7.4	<7.4	NRQ	NRQ
LEAD,TOTAL UG/L	1051 ICAP	<63.8	<63.8	<63.8	<63.8	<63.8	<63.8	<63.8	<63.8	<63.8	<63.8	NRQ	NRQ
MERCURY,TOTAL UG/L	71900 CVAA	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	NRQ	NRQ
SELENIUM,TOTAL UG/L	1147 GFAA	<2.0	<2.0	<2.0	<2.0	3.5	<2.0	<2.0	<2.0	<2.0	<2.0	NRQ	NRQ
SILVER,TOTAL UG/L	1077 ICAP	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	<6.1	NRQ	NRQ
ACENAPHTHENE UG/L	34205 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
ACENAPHTHYLENE UG/L	34200 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
ANTHRACENE UG/L	34220 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
BENZO(A)ANTHRACENE UG/L	34526 GMS	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	NRQ	NRQ
BENZO(A)PYRENE UG/L	34247 GMS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NRQ	NRQ
BENZO(B)FLUORANTHENE UG/L	34230 GMS	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	NRQ	NRQ
BENZO(GHI)PERYLENE UG/L	34521 GMS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	NRQ	NRQ
BENZO(K)FLUORANTHENE UG/L	34242 GMS	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	NRQ	NRQ
CHRYSENE UG/L	34320 GMS	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	NRQ	NRQ
DIBEN'(A,H)ANTH'CENE UG/L	34556 GMS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	NRQ	NRQ
FLUORANTHENE UG/L	34376 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
FLUORENE UG/L	34381 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
INDENO(1,2,3-CD) PYRENE UG/L	34403 GMS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	NRQ	NRQ
NAPHTHALENE UG/L	34696 GMS	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
PHENANTHRENE UG/L	34461 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ
PYRENE UG/L	34469 GMS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NRQ	NRQ

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	WMW-1 WRITW1 1	WMW-2 WRITW1 2	WMW-3 WRITW1 3	WMW-4 WRITW1 4	WMW-5 WRITW1 5	WMW-6 WRITW1 6	WMW-7 WRITW1 7	WMW-DUP WRITW1 8	WSOURCE WRITW1 10	EQPBLK WRITW1 11	TRPBLK WRITW1 13	TRPBLK WRITW1 14
DATE TIME		03/11/92 15:15	03/11/92 15:30	03/11/92 15:45	03/13/92 09:40	03/13/92 10:40	03/13/92 08:45	03/14/92 09:45	03/13/92	03/13/92	03/13/92	03/11/92 18:00	03/14/92
BENZENE UG/L	34030 GMS	4.7	<1.0	<1.0	<1.0	270	230	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BROMODICHLOROMETHANE UG/L	32101 GMS	<2.2	<2.2	<2.2	<2.2	<4.4	<4.4	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
BROMOFORM UG/L	32104 GMS	<2.6	<2.6	<2.6	<2.6	<5.2	<5.2	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
BROMOMETHANE UG/L	34413 GMS	<3.5	<3.5	<3.5	<3.5	<7.0	<7.0	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5
CARBON DISULFIDE UG/L	77041 GMS	<4.4	<4.4	<4.4	<4.4	<8.8	<8.8	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
CARBON TETRACHLORIDE UG/L	32102 GMS	<2.6	<2.6	<2.6	<2.6	<5.2	<5.2	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6
CHLOROBENZENE UG/L	34301 GMS	<1.4	<1.4	<1.4	<1.4	<2.8	<2.8	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
DIBROMOCHLOROMETHANE UG/L	32105 GMS	<2.3	<2.3	<2.3	<2.3	<4.6	<4.6	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
CHLOROETHANE UG/L	34311 GMS	<8.2	<8.2	<8.2	<8.2	<16	<16	<8.2	<8.2	<8.2	<8.2	<8.2	<8.2
CHLOROFORM UG/L	32106 GMS	<2.5	<2.5	<2.5	<2.5	<5.0	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
2-CHLOROETHYLVINYL-ETHER UG/L	34576 GMS	<3.1	<3.1	<3.1	<3.1	<6.2	<6.2	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
CHLOROMETHANE UG/L	34418 GMS	<4.4	<4.4	<4.4	<4.4	<8.8	<8.8	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
DICHLOROBENZENE,TOT. UG/L	81524 GMS	<4.0	<4.0	<4.0	<4.0	<8.0	<8.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
1,1-DICHLOROETHANE UG/L	34496 GMS	<2.5	<2.5	<2.5	<2.5	<5.0	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
1,2-DICHLOROETHANE UG/L	34531 GMS	<2.5	<2.5	<2.5	<2.5	<5.0	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
1,1-DICHLOROETHYLENE UG/L	34501 GMS	<3.2	<3.2	<3.2	<3.2	<6.4	<6.4	<3.2	<3.2	<3.2	<3.2	<3.2	<3.2
1,2-DICHLOROETHENE(TOTAL) UG/L	96463 GMS	<2.4	<2.4	<2.4	<2.4	<4.8	<4.8	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
1,2-DICHLOROPROPANE UG/L	34541 GMS	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
CIS-1,3-DICHLORO-PROPENE UG/L	34704 GMS	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TRANS-1,3-DICHLORO-PROPENE UG/L	34699 GMS	<1.6	<1.6	<1.6	<1.6	<3.2	<3.2	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
DIETHYL ETHER, TOTAL UG/L	81576 GMS	<5	<5	<5	<5	<10	<10	<5	<5	<5	<5	<5	<5
ETHYLBENZENE UG/L	34371 GMS	<1.3	<1.3	<1.3	<1.3	76	6.7	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
METHYLENE CHLORIDE UG/L	34423 GMS	<6.4	<6.4	<6.4	<6.4	<13	<13	<6.4	<6.4	<6.4	<6.4	<6.4	<6.4
METHYL ETHYL KETONE UG/L	81595 GMS	<10.0	<10.0	<10.0	<10.0	<20	<20	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

PROJECT NUMBER 39240186 0201 PROJECT NAME COE - FT. STEWART
FIELD GROUP WRITW1 PROJECT MANAGER S.P. WOODWARD
ALL LAB COORDINATOR SUZANNE WOODWARD

SAMPLE ID'S / PARAMETERS / UNITS	STORET / METHOD	WMW-1 WRITW1 1	WMW-2 WRITW1 2	WMW-3 WRITW1 3	WMW-4 WRITW1 4	WMW-5 WRITW1 5	WMW-6 WRITW1 6	WMW-7 WRITW1 7	WMW-DUP WRITW1 8	WSOURCE WRITW1 10	EOPBLK WRITW1 11	TRPBLK WRITW1 13	TRPBLK WRITW1 14
DATE		03/11/92	03/11/92	03/11/92	03/13/92	03/13/92	03/13/92	03/14/92	03/13/92	03/13/92	03/13/92	03/11/92	03/14/92
TIME		15:15	15:30	15:45	09:40	10:40	08:45	09:45				18:00	
METHYL ISOBUT'KETONE UG/L	81596 GMS	<12	<12	<12	<12	<24	<24	<12	<12	<12	<12	<12	<12
1,1,2,2-TETRACHLORO-ETHANE UG/L	34516 GMS	<1.5	<1.5	<1.5	<1.5	<3.0	<3.0	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
TETRACHLOROETHENE UG/L	34475 GMS	<1.9	<1.9	<1.9	<1.9	<3.8	<3.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
TOLUENE UG/L	34010 GMS	<1.7	<1.7	<1.7	<1.7	<3.4	<3.4	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
1,1,1-TRICHL'ETHANE UG/L	34506 GMS	<2.5	<2.5	<2.5	<2.5	<5.0	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
1,1,2-TRICHL'ETHANE UG/L	34511 GMS	<2.8	<2.8	<2.8	<2.8	<5.6	<5.6	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
TRICHLOROETHENE UG/L	39180 GMS	<3.0	<3.0	<3.0	<3.0	<6.0	<6.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
TRICHLOROFLUORO-METHANE UG/L	34488 GMS	<4.6	<4.6	<4.6	<4.6	<9.2	<9.2	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
VINYL CHLORIDE UG/L	39175 GMS	<4.6	<4.6	<4.6	<4.6	<9.2	<9.2	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
XYLENES,TOTAL UG/L	81551 GMS	9.1	<3.7	<3.7	<3.7	170	300	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7

Environmental Science & Engineering DATE 02/12/93 STATUS : FINAL PAGE 1
PROJECT NUMBER 3924007V L221 PROJECT NAME CE - FT. STEWART
FIELD GROUP FTSTEB2 PROJECT MANAGER GARY WISE
ALL LAB COORDINATOR SUZANNE WOODWARD

?LE ID'S / ?RAMETERS / UNITS	STORET / METHOD	DUP FTSTEB2 3	WMW-7 FTSTEB2 4	EQPBLK FTSTEB2 6
?TE		01/15/93	01/15/93	01/15/93
?ME			12:24	12:20
?SENIC,TOTAL UG/L	1002 GFAA	<2.3	<2.3	<2.3
?RIUM,TOTAL UG/L	1007 ICAP	62.9	66.1	<1.1
?DMIUM,TOTAL UG/L	1027 ICAP	<4.4	<4.4	<4.4
?ROMIUM,TOTAL UG/L	1034 ICAP	10.5	<7.4	<7.4
?AD,TOTAL UG/L	1051 GFAA	<2.0	<2.0	<2.0
?RCURY,TOTAL UG/L	71900 CVAA	<0.18	<0.18	<0.18
?LENIUM,TOTAL UG/L	1147 GFAA	<2.0	<2.0	<2.0
?LVER,TOTAL UG/L	1077 ICAP	<6.1	<6.1	<6.1

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1990 RESULTS

Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
%MOISTURE	%WET WT	15.90	16.10	15.00	16.60	17.20	NRQ	NRQ
1,1,1-TRICHL'ETHANE	UG/KG-DRY	<1.60	<1.60	<1.50	<1.60	<1.60	NRQ	NRQ
1,1,1-TRICHL'ETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.60	<1.60
1,1,2,2-TETRACHLORO ETHANE	UG/KG-DRY	<1.80	<1.80	<1.80	<1.80	<1.80	NRQ	NRQ
1,1,2,2-TETRACHLORO ETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.50	<1.50
1,1,2-TRICHL'ETHANE	UG/KG-DRY	<1.90	<1.90	<1.90	<1.90	<1.90	NRQ	NRQ
1,1,2-TRICHL'ETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.87	<0.87
1,1-DICHLOROETHANE	UG/KG-DRY	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
1,1-DICHLOROETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.85	<0.85
1,1-DICHLOROETHENE	UG/G-DRY	<1.40	<1.40	<1.40	<1.40	<1.40	NRQ	NRQ
1,1-DICHLOROETHYLENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.20	<1.20
1,2-DICHLOROETHANE	UG/KG-DRY	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
1,2-DICHLOROETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.87	<0.87
1,2-DICHLOROETHANE-D4	UG/KG-DRY	59.00	61.00	61.00	60.00	61.00	NRQ	NRQ
1,2-DICHLOROETHANE-D4	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	54.00	NRQ
1,2-DICHLOROETHENE, TOTAL	UG/KG-DRY	<1.55	<1.53	<1.52	<1.55	<1.56	NRQ	NRQ
1,2-DICHLOROETHENE, TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.30	<1.30
1,2-DICHLOROPROPANE	UG/KG-DRY	<1.20	<1.10	<1.10	<1.20	<1.20	NRQ	NRQ
1,2-DICHLOROPROPANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.97	<0.97
2,4,6-TRIBROMOPHENOL	MG/KG-DRY	7400.00	7200.00	7100.00	7040.00	7400.00	NRQ	NRQ
2,4,6-TRIBROMOPHENOL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	180.00	NRQ

. Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA, Continued, Page 2 of 7

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
2-BUTANONE	UG/KG-DRY	<11.30	<11.10	<11.10	<11.30	<11.40	NRQ	NRQ
2-BUTANONE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<9.44	<9.44
2-FLUORBIPHENYL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	74.00	NRQ
2-FLUOROBIPHENYL	UG/KG-DRY	3150.00	3200.00	3430.00	3260.00	3360.00	NRQ	NRQ
2-FLUOROPHENOL	UG/KG-DRY	8970.00	8510.00	8920.00	8710.00	9220.00	NRQ	NRQ
2-FLUOROPHENOL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	130.00	NRQ
2-HEXANONE	UG/KG-DRY	<3.70	<3.70	<3.70	<3.70	<3.80	NRQ	NRQ
2-HEXANONE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.10	<3.10
4-METHYL-2-PENTANONE	UG/KG-DRY	<3.20	<3.16	<3.14	<3.20	<3.22	NRQ	NRQ
4-METHYL-2-PENTANONE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.00	<3.00
ACENAPHTHENE	UG/KG-DRY	<150.00	<150.00	<150.00	<150.00	<150.00	NRQ	NRQ
ACENAPHTHENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.80	NRQ
ACENAPHTHYLENE	UG/KG-DRY	<110.00	<110.00	<110.00	<110.00	<110.00	NRQ	NRQ
ACENAPHTHYLENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.70	NRQ
ACETONE	UG/KG-DRY	<20.00	<20.00	<20.00	<20.00	<20.00	NRQ	NRQ
ACETONE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<17.00	<17.00
ANTHRACENE	UG/KG-DRY	<85.00	<85.00	<84.00	<86.00	<86.00	NRQ	NRQ
ANTHRACENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.10	NRQ
ARSENIC,SED	MG/KG-DRY	<0.54	<0.54	3.35	1.37	4.59	NRQ	NRQ
ARSENIC,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.30	NRQ
BARIUM,SED	MG/KG-DRY	8.28	8.83	7.95	4.36	6.28	NRQ	NRQ

Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA, Continued, Page 3 of 7

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
BARIUM,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	3.01	NRQ
BENZENE	UG/KG-DRY	<1.30	<1.30	<1.30	<1.30	<1.40	NRQ	NRQ
BENZENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.10	<1.10
BENZO(A)ANTHRACENE	UG/KG-DRY	<70.00	<70.00	<69.00	<70.00	<71.00	NRQ	NRQ
BENZO(A)ANTHRACENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.80	NRQ
BENZO(A)PYRENE	UG/KG-DRY	<210.00	<210.00	<200.00	<210.00	<210.00	NRQ	NRQ
BENZO(A)PYRENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<5.20	NRQ
BENZO(B)FLUORANTHENE	UG/KG-DRY	<150.00	<150.00	<150.00	<150.00	<150.00	NRQ	NRQ
BENZO(B)FLUORANTHENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.80	NRQ
BENZO(GHI)PERYLENE	UG/KG-DRY	<83.00	<83.00	<82.00	<84.00	<85.00	NRQ	NRQ
BENZO(GHI)PERYLENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.10	NRQ
BENZO(K)FLUORANTHENE	UG/KG-DRY	<190.00	<190.00	<190.00	<190.00	<190.00	NRQ	NRQ
BENZO(K)FLUORANTHENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<4.70	NRQ
BROMODICHLOROMETHANE	UG/KG-DRY	<1.20	<1.20	<1.10	<1.20	<1.20	NRQ	NRQ
BROMODICHLOROMETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.98	<0.98
BROMOFLUOROBENZENE	UG/KG-DRY	59.00	59.00	56.00	59.00	61.00	NRQ	NRQ
BROMOFLUOROBENZENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	46.00	NRQ
BROMOFORM	UG/KG-DRY	<2.90	<2.90	<2.90	<2.90	<3.00	NRQ	NRQ
BROMOFORM	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.50	<2.50
BROMOMETHANE	UG/KG-DRY	<1.40	<1.40	<1.40	<1.40	<1.40	NRQ	NRQ
BROMOMETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.20	<1.20

Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA, Continued, Page 4 of 7

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
CADMIUM,SED	MG/KG-DRY	<0.42	<0.42	<0.41	<0.42	<0.42	NRQ	NRQ
CADMIUM,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.50	NRQ
CARBON DISULFIDE	UG/KG-DRY	<3.70	<3.70	<3.60	<3.70	<3.70	NRQ	NRQ
CARBON DISULFIDE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.10	<3.10
CARBON TETRACHLORIDE	UG/KG-DRY	<1.20	<1.10	<1.10	<1.20	<1.20	NRQ	NRQ
CARBON TETRACHLORIDE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.97	<0.97
CHLOROBENZENE	UG/KG-DRY	<0.78	<0.77	<0.76	<0.78	<0.78	NRQ	NRQ
CHLOROBENZENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.65	<0.65
CHLOROETHANE	UG/KG-DRY	<2.10	<2.10	<2.10	<2.10	<2.10	NRQ	NRQ
CHLOROETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.80	<1.80
CHLOROFORM	UG/KG-DRY	<1.40	<1.40	<1.40	<1.40	<1.40	NRQ	NRQ
CHLOROFORM	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.20	<1.20
CHLOROMETHANE	UG/KG-DRY	<29.00	<29.00	<28.00	<29.00	<29.00	NRQ	NRQ
CHLOROMETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<24.00	<24.00
CHROMIUM,SED	MG/KG-DRY	9.58	8.57	18.90	10.50	8.83	NRQ	NRQ
CHROMIUM,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<7.00	NRQ
CHRYSENE	UG/KG-DRY	<110.00	<110.00	<110.00	<110.00	<110.00	NRQ	NRQ
CHRYSENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.80	NRQ
CIS-1,3-DICHLOROPROPENE	UG/KG-DRY	<1.80	<1.80	<1.80	<1.80	<1.80	NRQ	NRQ
CIS-1,3-DICHLOROPROPENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.50	<1.50
DIBEN'(A,H)ANTH'CENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.80	NRQ

Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA, Continued, Page 5 of 7

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
DIBEN(A,H)ANTHRACENE	UG/KG-DRY	<71.00	<72.00	<71.00	<72.00	<72.00	NRQ	NRQ
DIBROMOCHLOROMETHANE	UG/KG-DRY	<1.60	<1.50	<1.50	<1.60	<1.60	NRQ	NRQ
DIBROMOCHLOROMETHANE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.30	<1.30
ETHYLBENZENE	UG/KG-DRY	<1.20	<1.20	<1.20	<1.20	<1.20	NRQ	NRQ
ETHYLBENZENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.00	<1.00
FLUORANTHENE	UG/KG-DRY	<130.00	<130.00	<130.00	<130.00	<130.00	NRQ	NRQ
FLUORANTHENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.20	NRQ
FLUORENE	UG/KG-DRY	<120.00	<120.00	<120.00	<120.00	<120.00	NRQ	NRQ
FLUORENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<3.10	NRQ
INDENO(1,2,3-CD)PYRENE	UG/KG-DRY	<110.00	<110.00	<110.00	<110.00	<110.00	NRQ	NRQ
INDENO(1,2,3-CD)PYRENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.70	NRQ
LEAD,SED	MG/KG-DRY	10.90	7.77	10.80	<6.00	7.84	NRQ	NRQ
LEAD,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<25.00	NRQ
MERCURY,SED	MG/KG-DRY	<0.11	<0.11	<0.11	<0.12	<0.12	NRQ	NRQ
MERCURY,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.20	NRQ
METHYLENE CHLORIDE	UG/KG-DRY	3.90	<1.90	3.40	3.30	2.50	NRQ	NRQ
METHYLENE CHLORIDE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	3.70	3.30
NAPHTHALENE	UG/KG-DRY	<230.00	<240.00	<230.00	<240.00	<240.00	NRQ	NRQ
NAPHTHALENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<5.90	NRQ
NITROBENZENE-D(5)	UG/KG-DRY	3740.00	3820.00	3850.00	3870.00	3900.00	NRQ	NRQ
NITROBENZENE-D(5)	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	83.00	NRQ

Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA, Continued, Page 6 of 7

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
PHENANTHRENE	UG/KG-DRY	<76.00	<76.00	<75.00	<77.00	<77.00	NRQ	NRQ
PHENANTHRENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.90	NRQ
PHENOL-D(5)	UG/KG-DRY	8020.00	7850.00	8170.00	8130.00	7200.00	NRQ	NRQ
PHENOL-D(5)	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	93.00	NRQ
PYRENE	UG/KG-DRY	<81.00	<81.00	<80.00	<82.00	<82.00	NRQ	NRQ
PYRENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.00	NRQ
SELENIUM,SED	MG/KG-DRY	<0.47	<0.47	0.53	<0.48	<0.48	NRQ	NRQ
SELENIUM,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.00	NRQ
SILVER,SED	MG/KG-DRY	<0.68	<0.68	<0.67	<0.68	<0.69	NRQ	NRQ
SILVER,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<5.70	NRQ
STYRENE	UG/KG-DRY	<1.90	<1.90	<1.90	<1.90	<1.90	NRQ	NRQ
STYRENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.60	<1.60
TERPHENYL-(D14)	MG/KG-DRY	4030.00	3500.00	4660.00	4500.00	4620.00	NRQ	NRQ
TERPHENYL-(D14)	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	75.00	NRQ
TETRACHLOROETHENE	UG/KG-DRY	<0.61	<0.60	<0.60	<0.61	<0.61	NRQ	NRQ
TETRACHLOROETHENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.51	<0.51
TOLUENE	UG/KG-DRY	22.00	33.00	14.00	22.00	26.00	NRQ	NRQ
TOLUENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	2.20	1.20
TOLUENE-D(8)	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	50.00	NRQ
TOLUENE-D8	UG/KG-DRY	61.00	63.00	62.00	63.00	61.00	NRQ	NRQ
TRANS-1,3-DICHLOROPROPENE	UG/KG-DRY	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ

Analytical Parameters Detected in Soil Samples in 1990, Wright AAFTA, Continued, Page 7 of 7

PARAMETERS	UNITS	WSB-1	WSB-2	WSB-3	WSB-4	WSB-3DUP	RINSEBLK	TRPBLK
		5-10 FT.	8-10 FT.	6-10 FT.	8-10 FT.	6-10 FT.		
		02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90	02/15/90
		08:50	10:06	10:55	12:15	10:55	12:30	12:00
TRANS-1,3-DICHLOROPROPENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.86	<0.86
TRICHLOROETHENE	UG/KG-DRY	<1.00	<1.00	<1.00	<1.00	<1.00	NRQ	NRQ
TRICHLOROETHENE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<0.87	<0.87
VINYL ACETATE	UG/KG-DRY	<3.10	<3.00	<3.00	<3.10	<3.10	NRQ	NRQ
VINYL ACETATE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<2.60	<2.60
VINYL CHLORIDE	UG/KG-DRY	<1.90	<1.80	<1.80	<1.90	<1.90	NRQ	NRQ
VINYL CHLORIDE	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.60	<1.60
XYLENE,SED	UG/KG-DRY	<1.20	<1.20	<1.20	<1.20	<1.20	NRQ	NRQ
XYLENES,TOTAL	UG/L (EPTOX)	NRQ	NRQ	NRQ	NRQ	NRQ	<1.00	<1.00

Source: ESE.

. Analytical Parameters Detected in Groundwater Samples in 1990, Wright AAFTA

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-1DUP	RINSEBLK	TRPBLK
		03/08/90	03/08/90	03/08/90	03/08/90	03/08/90	03/08/90
		13:40	14:50	15:30	13:40	14:10	16:00
1,1,1-TRICHL'ETHANE	UG/L	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30
1,1,2,2-TETRACHLORO ETHANE	UG/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50
1,1,2-TRICHL'ETHANE	UG/L	<1.60	<1.60	<1.60	<1.60	<1.60	<1.60
1,1-DICHLOROETHANE	UG/L	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85
1,1-DICHLOROETHYLENE	UG/L	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20
1,2-DICHLOROETHANE	UG/L	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
1,2-DICHLOROETHANE-D4	UG/L	46.00	46.00	47.00	45.00	45.00	46.00
1,2-DICHLOROETHENE, TOTAL	UG/L	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30
1,2-DICHLOROPROPANE	UG/L	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97
2,4,6-TRIBROMOPHENOL	UG/L	170.00	200.00	180.00	170.00	160.00	NRQ
2-BUTANONE	UG/L	<9.44	<9.44	<9.44	<9.44	<9.44	<9.44
2-FLUORBIPHENYL	UG/L	79.00	82.00	77.00	79.00	76.00	NRQ
2-FLUOROPHENOL	UG/L	150.00	170.00	170.00	160.00	170.00	NRQ
2-HEXANONE	UG/L	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10
4-METHYL-2-PENTANONE	UG/L	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00
ACENAPHTHENE	UG/L	<3.80	<3.80	<3.80	<3.80	<3.80	NRQ
ACENAPHTHYLENE	UG/L	<2.70	<2.70	<2.70	<2.70	<2.70	NRQ
ACETONE	UG/L	<17.00	<17.00	<17.00	<17.00	75.00	<17.00
ANTHRACENE	UG/L	<2.10	<2.10	<2.10	<2.10	<2.10	NRQ
ARSENIC,TOTAL	UG/L	8.50	<2.30	<2.30	4.80	7.20	NRQ
BARIUM,TOTAL	UG/L	1180.00	148.00	28.50	1630.00	2.00	NRQ
BENZENE	UG/L	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10

Analytical Parameters Detected in Groundwater Samples in 1990, Wright AAFTA, Continued, Page 2 of 4

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-1DUP	RINSEBLK	TRPBLK
		03/08/90	03/08/90	03/08/90	03/08/90	03/08/90	03/08/90
		13:40	14:50	15:30	13:40	14:10	16:00
BENZO(A)ANTHRACENE	UG/L	<1.80	<1.80	<1.80	<1.80	<1.80	NRQ
BENZO(A)PYRENE	UG/L	<5.20	<5.20	<5.20	<5.20	<5.20	NRQ
BENZO(B)FLUORANTHENE	UG/L	<3.80	<3.80	<3.80	<3.80	<3.80	NRQ
BENZO(GHI)PERYLENE	UG/L	<2.10	<2.10	<2.10	<2.10	<2.10	NRQ
BENZO(K)FLUORANTHENE	UG/L	<4.70	<4.70	<4.70	<4.70	<4.70	NRQ
BROMODICHLOROMETHANE	UG/L	<0.98	<0.98	<0.98	<0.98	<0.98	<0.98
BROMOFLUOROBENZENE	UG/L	52.00	51.00	51.00	51.00	51.00	44.00
BROMOFORM	UG/L	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
BROMOMETHANE	UG/L	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20
CADMIUM,TOTAL	UG/L	<3.50	<3.50	<3.50	<3.50	<3.50	NRQ
CARBON DISULFIDE	UG/L	<3.10	<3.10	<3.10	<3.10	<3.10	<3.10
CARBON TETRACHLORIDE	UG/L	<0.97	<0.97	<0.97	<0.97	<0.97	<0.97
CHLOROBENZENE	UG/L	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
CHLOROETHANE	UG/L	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80
CHLOROFORM	UG/L	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20
CHLOROMETHANE	UG/L	<24.00	<24.00	<24.00	<24.00	<24.00	<24.00
CHROMIUM,TOTAL	UG/L	241.00	54.40	13.70	329.00	<7.00	NRQ
CHRYSENE	UG/L	<2.80	<2.80	<2.80	<2.80	<2.80	NRQ
CIS-1,3-DICHLOROPROPENE	UG/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50
DIBEN'(A,H)ANTH'CENE	UG/L	<1.80	<1.80	<1.80	<1.80	<1.80	NRQ
DIBROMOCHLOROMETHANE	UG/L	<1.30	<1.30	<1.30	<1.30	<1.30	<1.30
ETHYLBENZENE	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00

Analytical Parameters Detected in Groundwater Samples in 1990, Wright AAFTA, Continued, Page 3 of 4

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-1DUP	RINSEBLK	TRPBLK
		03/08/90	03/08/90	03/08/90	03/08/90	03/08/90	03/08/90
		13:40	14:50	15:30	13:40	14:10	16:00
FLUORANTHENE	UG/L	<3.20	<3.20	<3.20	<3.20	<3.20	NRQ
FLUORENE	UG/L	<3.10	<3.10	<3.10	<3.10	<3.10	NRQ
INDENO(1,2,3-CD)PYRENE	UG/L	<2.70	<2.70	<2.70	<2.70	<2.70	NRQ
LEAD,TOTAL	UG/L	284.00	82.80	<25.00	391.00	<25.00	NRQ
MERCURY,TOTAL	UG/L	<0.20	<0.20	<0.20	<0.20	<0.20	NRQ
METHYLENE CHLORIDE	UG/L	<1.60	<1.60	<1.60	<1.60	<1.60	11.00
NAPHTHALENE	UG/L	<5.90	<5.90	<5.90	<5.90	<5.90	NRQ
NITROBENZENE-D(5)	UG/L	82.00	84.00	83.00	83.00	83.00	NRQ
PHENANTHRENE	UG/L	<1.90	<1.90	<1.90	<1.90	<1.90	NRQ
PHENOL-D(5)	UG/L	95.00	110.00	100.00	100.00	98.00	NRQ
PYRENE	UG/L	<2.00	<2.00	<2.00	<2.00	<2.00	NRQ
SELENIUM,TOTAL	UG/L	2.20	2.50	3.40	4.60	3.10	NRQ
SILVER,TOTAL	UG/L	<5.70	<5.70	<5.70	<5.70	<5.70	NRQ
STYRENE	UG/L	<1.60	<1.60	<1.60	<1.60	<1.60	<1.60
TERPHENYL-(D14)	UG/L	66.00	82.00	100.00	70.00	95.00	NRQ
TETRACHLOROETHENE	UG/L	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
TOLUENE	UG/L	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70
TOLUENE-D(8)	UG/L	52.00	52.00	54.00	51.00	53.00	52.00
TRANS-1,3-DICHLOROPROPENE	UG/L	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86
TRICHLOROETHENE	UG/L	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87
VINYL ACETATE	UG/L	<2.60	<2.60	<2.60	<2.60	<2.60	<2.60
VINYL CHLORIDE	UG/L	<1.60	<1.60	<1.60	<1.60	<1.60	<1.60

Analytical Parameters Detected in Groundwater Samples in 1990, Wright AAFTA, Continued, Page 4 of 4

PARAMETERS	UNITS	WMW-1	WMW-2	WMW-3	WMW-1DUP	RINSEBLK	TRPBLK
		03/08/90	03/08/90	03/08/90	03/08/90	03/08/90	03/08/90
		13:40	14:50	15:30	13:40	14:10	16:00
XYLENES,TOTAL	UG/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00

Source: ESE.

APPENDIX K

QA/QC RECORDS

Environmental Science and Engineering, Inc.
SAMPLE DATE REPORT FOR COE - FT. STEWART WRIGHT ARMY AIRFIELD SOILS
04/20/92

SAMPLE ID	STATION ID	COLL. DATE	CLASSIFICATION	EXTRACTION DATE	ANALYSIS DATE	(DAYS) COLL. TO EXTR.	EXTR. TO ANA.	COLL. TO ANA.	ESE Batch
WRITS1*1	WS-1	03/09/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	3	1	4	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	15	1	16	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	9	2	11	G26765
			MERCURY-SW7471	03/17/92	03/18/92	8	1	9	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	15	1	16	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/19/92	3	7	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			7	G26918
WRITS1*2	WS-2	03/09/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	3	1	4	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	15	1	16	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	9	2	11	G26765
			MERCURY-SW7471	03/17/92	03/18/92	8	1	9	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	15	1	16	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	3	8	11	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			7	G26918
WRITS1*3	WS-3	03/09/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	3	1	4	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	15	1	16	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	9	2	11	G26765
			MERCURY-SW7471	03/17/92	03/18/92	8	1	9	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	15	1	16	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	3	8	11	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			7	G26918
WRITS1*4	WS-4	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	2	8	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*5	WS-5	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	2	8	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*6	WS-6	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	2	8	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*7	WS-7	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/19/92	2	7	9	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*8	WS-8	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/19/92	2	7	9	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*9	WS-9	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598

Environmental Science and Engineering, Inc.
SAMPLE DATE REPORT FOR COE - FT. STEWART WRIGHT ARMY AIRFIELD SOILS
04/20/92

SAMPLE ID	STATION ID	COLL. DATE	CLASSIFICATION	EXTRACTION DATE	ANALYSIS DATE	(DAYS) COLL. TO EXTR.	EXTR. TO ANA.	COLL. TO ANA.	ESE Batch
WRITS1*9	WS-9	03/10/92	ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/19/92	2	7	9	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*10	WS-DUP	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/19/92	2	7	9	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*12	WSD-1	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	2	8	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*13	WSD-2	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	2	8	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918
WRITS1*14	WSD-DUP	03/10/92	PERCENT MOISTURE - ASTM D2216	03/12/92	03/13/92	2	1	3	G26598
			ARSENIC-SW3050/SW7060	03/24/92	03/25/92	14	1	15	G26729
			ICAP METALS SCAN-SW3050/SW6010	03/18/92	03/20/92	8	2	10	G26765
			MERCURY-SW7471	03/17/92	03/18/92	7	1	8	G26696
			SELENIUM-SW3050/SW7740	03/24/92	03/25/92	14	1	15	G26733
			SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270	03/12/92	03/20/92	2	8	10	G26777
			VOLATILE ORGANIC CMPDS-SW3050/SW8240	NA	03/16/92			6	G26918

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Waters

Environmental Science and Engineering, Inc.
SAMPLE DATE REPORT FOR COE - FT. STEWART WRIGHT ARMY AIRFIELD WATERS
04/20/92

SAMPLE ID	STATION ID	COLL. DATE	CLASSIFICATION	EXTRACTION DATE	ANALYSIS DATE	(DAYS) COLL. TO EXTR.	EXTR. TO ANA.	COLL. TO ANA.	ESE Batch
WRITWI*1	WMW-1	03/11/92	ARSENIC-SW7060	03/17/92	03/19/92	6	2	8	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	6	1	7	G26699
			MERCURY-SW7470	03/23/92	03/24/92	12	1	13	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	6	3	9	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	7	1	8	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			5	G26649
WRITWI*2	WMW-2	03/11/92	ARSENIC-SW7060	03/17/92	03/19/92	6	2	8	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	6	1	7	G26699
			MERCURY-SW7470	03/23/92	03/24/92	12	1	13	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	6	3	9	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	7	1	8	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			5	G26649
WRITWI*3	WMW-3	03/11/92	ARSENIC-SW7060	03/17/92	03/19/92	6	2	8	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	6	1	7	G26699
			MERCURY-SW7470	03/23/92	03/24/92	12	1	13	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	6	3	9	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	7	1	8	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			5	G26649
WRITWI*4	WMW-4	03/13/92	ARSENIC-SW7060	03/17/92	03/19/92	4	2	6	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	4	1	5	G26699
			MERCURY-SW7470	03/23/92	03/24/92	10	1	11	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	4	3	7	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	5	1	6	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			3	G26649
WRITWI*5	WMW-5	03/13/92	ARSENIC-SW7060	03/17/92	03/19/92	4	2	6	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	4	1	5	G26699
			MERCURY-SW7470	03/23/92	03/24/92	10	1	11	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	4	3	7	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	5	1	6	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/17/92			4	G26705
WRITWI*6	WMW-6	03/13/92	ARSENIC-SW7060	03/17/92	03/19/92	4	2	6	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	4	1	5	G26699
			MERCURY-SW7470	03/23/92	03/24/92	10	1	11	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	4	3	7	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	5	1	6	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/17/92			4	G26705
WRITWI*7	WMW-7	03/14/92	ARSENIC-SW7060	03/17/92	03/19/92	3	2	5	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	3	1	4	G26699
			MERCURY-SW7470	03/23/92	03/24/92	9	1	10	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	3	3	6	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	4	1	5	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			2	G26649
WRITWI*8	WMW-DUP	03/13/92	ARSENIC-SW7060	03/17/92	03/19/92	4	2	6	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	4	1	5	G26699
			MERCURY-SW7470	03/23/92	03/24/92	10	1	11	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	4	3	7	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	5	1	6	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			3	G26649
WRITWI*10	WSOURCE	03/13/92	ARSENIC-SW7060	03/17/92	03/19/92	4	2	6	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	4	1	5	G26699
			MERCURY-SW7470	03/23/92	03/24/92	10	1	11	G26802
			SELENIUM-SW7740	03/17/92	03/20/92	4	3	7	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	5	1	6	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			3	G26649
WRITWI*11	EQPBLK	03/13/92	ARSENIC-SW7060	03/17/92	03/19/92	4	2	6	G26768
			ICAP METALS-SW6010	03/17/92	03/18/92	4	1	5	G26699
			MERCURY-SW7470	03/23/92	03/24/92	10	1	11	G26802

Environmental Science and Engineering, Inc.
SAMPLE DATE REPORT FOR COE - FT. STEWART WRIGHT ARMY AIRFIELD WATERS
04/20/92

SAMPLE ID	STATION ID	COLL. DATE	CLASSIFICATION	EXTRACTION DATE	ANALYSIS DATE	(DAYS) COLL. TO EXTR.	EXTR. TO ANA.	COLL. TO ANA.	ESE Batch
WRITWI*11	EQPBLK	03/13/92	SELENIUM-SW7740	03/17/92	03/20/92	4	3	7	G26772
			SEMIVOLATILE ORGANIC CMPDS-E625	03/18/92	03/19/92	5	1	6	G26775
			VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			3	G26649
WRITWI*13	TRPBLK	03/11/92	VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			5	G26649
WRITWI*14	TRPBLK	03/14/92	VOLATILE ORGANIC COMPDS - SW8240	NA	03/16/92			2	G26649

Quality Control Summary Reports

By Analytical Batch

318

ESE Data Batch - QC Summary - A Description

1. The ESE batch number appears at the top of each page. A general description of and the method number appear after the batch number on the first page of the batch.

2. This item contains information concerning the batch status, method blank correction (if any), batch notes, the ESE field group name, and lab coordinator responsible for those field groups.

3. This item lists the laboratory and client sample identification. In CLASS (ESE's LIMS), samples are identified using the combination of the field group name and sequence number. For example in the attached batch summary, the field group name is HUNTS1; the sequence number is 22. The interpretation of the field group name is as follows:

HUNT - Installation name (Hunter Army Airfield)
S - Matrix (soil/sediment)
1 - Round number

The date of analysis is always recorded; and in this report, these dates are summarized in the "Sample Date Report" section. For selected methods, the date and time of analysis for each sample is recorded in the data batch file; this information is displayed in section 3 of this summary.

4. Section 4 summarizes the QC data for that batch of samples and analysis; this section of the report is segregated by QC type. Each area details the samples, units, found, target, percent recovery, and criteria used for the acceptance of the data.

For QC performed on environmental samples, the field group * sequence number of the sample used is encoded in the series under the header "SAMPLE". For example under Sample Matrix Spike Recovery Summary, SPM1*HUNTS1*22 can be read as the matrix spike for sample HUNTS1*22.

The following abbreviations are used in the QC section:

MB = Method Blank
SP = Standard Matrix Spike (equivalent to LCS)
LCS = Laboratory Control Sample (equivalent to SP)
RP = Replicate
RF = Reference
SPM = Sample Matrix Spike
SUR = Surrogate
SPX = Analytical (post-digestion) Spike

5. Section 5 summarizes the automated computer checks that are performed for each batch (as appropriate to the method). Each and every "no" answer requires a comment by the analyst and/or their supervisor. The explanation is printed at the bottom of the page.

Note: Samples from Ft. Stewart Hunter AAF and Wright AAF were analyzed in the same batch for some methods. For these samples, the QC will be reported for each site.

ESE BATCH : G26658
CLASSIFICATION : NON-HALOGENATED VOLATILE-SW 8240

1.

QC TYPE : FDER/SW
ANALYST : GREGORY LAMB
EXTRACTOR :
DATA ENTRY : TODD ROMERO

REPORT DATE/TIME : 04/22/92 10:28:44
ANALYSIS DATE : 03/09/92
EXTRACT DATE :

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : BY CONCENTRATION

2.

BATCH NOTES
DOWNLOAD FILE HUNTSGLI

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTS1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
HUNTS1*22	HS-DUP	03/09/92	03:11PM
HUNTS1*1	HS-1	03/09/92	05:21PM
HUNTS1*3	HS-3	03/09/92	06:05PM
HUNTS1*4	HS-4	03/09/92	06:48PM
HUNTS1*7	HS-7	03/09/92	07:31PM
HUNTS1*15	HS-15	03/09/92	10:58PM
HUNTS1*18	HS-18	03/09/92	11:41PM
HUNTS1*19	HS-19	03/10/92	12:24AM
HUNTS1*23	HS-DUP	03/10/92	01:07AM
HUNTS1*26	HSD-1	03/10/92	01:51AM
HUNTS1*28	HSD-3	03/10/92	02:34AM
HUNTS1*29	HSD-4	03/10/92	03:17AM
HUNTS1*30	HSD-DUP	03/10/92	04:00AM
HUNTS1*27	HSD-2	03/10/92	04:44AM
HUNTS1*2	HS-2	03/10/92	05:27AM
HUNTS1*8	HS-8	03/10/92	06:10AM
HUNTS1*9	HS-9	03/10/92	06:54AM
HUNTS1*12	HS-12	03/11/92	03:19PM
HUNTS1*14	HS-14	03/11/92	05:33PM
HUNTS1*13	HS-13	03/11/92	06:16PM
HUNTS1*17	HS-17	03/11/92	06:59PM
HUNTS1*16	HS-16	03/11/92	07:43PM
HUNTS1*10	HS-10	03/12/92	09:39PM
HUNTS1*11	HS-11	03/12/92	11:45PM

3.

ESE BATCH : G26658

Section 4.

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/09/92	MB*QC*0309	34421*GMS	CHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34416*GMS	BROMOMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34495*GMS	VINYL CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34314*GMS	CHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34426*GMS	METHYLENE CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	78544*GMS	CARBON DISULFIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34491*GMS	TRICHLOROFLUOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34504*GMS	1,1-DICHLOROETHYLENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34499*GMS	1,1-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	96464*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/KG	ND
03/09/92	MB*QC*0309	97201*GMS	DIETHYL ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34318*GMS	CHLOROFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34534*GMS	1,2-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	75078*GMS	METHYL ETHYL KETONE	UG/KG-DRY	8.0
03/09/92	MB*QC*0309	34509*GMS	1,1,1-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34299*GMS	CARBON TETRACHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34330*GMS	BROMODICHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34544*GMS	1,2-DICHLOROPROPANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34702*GMS	CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34487*GMS	TRICHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34309*GMS	DIBROMOCHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34237*GMS	BENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34514*GMS	1,1,2-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34579*GMS	2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34697*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34290*GMS	BROMOFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0309	75169*GMS	METHYLISOBUTYLKETONE	UG/KG-DRY	1.3
03/09/92	MB*QC*0309	34478*GMS	TETRACHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34519*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34483*GMS	TOLUENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34304*GMS	CHLOROBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	34374*GMS	ETHYLBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309	45510*GMS	XYLENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0309	98578*GMS	DICHLOROBENZENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34421*GMS	CHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34416*GMS	BROMOMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34495*GMS	VINYL CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34314*GMS	CHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34426*GMS	METHYLENE CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	78544*GMS	CARBON DISULFIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34491*GMS	TRICHLOROFLUOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34504*GMS	1,1-DICHLOROETHYLENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34499*GMS	1,1-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	96464*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/KG	ND
03/09/92	MB*QC*0309B	97201*GMS	DIETHYL ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34318*GMS	CHLOROFORM	UG/KG-DRY	1.0
03/09/92	MB*QC*0309B	34534*GMS	1,2-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	75078*GMS	METHYL ETHYL KETONE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34509*GMS	1,1,1-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34299*GMS	CARBON TETRACHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34330*GMS	BROMODICHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34544*GMS	1,2-DICHLOROPROPANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34702*GMS	CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34487*GMS	TRICHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34309*GMS	DIBROMOCHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34237*GMS	BENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34514*GMS	1,1,2-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34579*GMS	2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34697*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34290*GMS	BROMOFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	75169*GMS	METHYLISOBUTYLKETONE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34478*GMS	TETRACHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34519*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34483*GMS	TOLUENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34304*GMS	CHLOROBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	34374*GMS	ETHYLBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	45510*GMS	XYLENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0309B	98578*GMS	DICHLOROBENZENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34421*GMS	CHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34416*GMS	BROMOMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34495*GMS	VINYL CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34314*GMS	CHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34426*GMS	METHYLENE CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	78544*GMS	CARBON DISULFIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34491*GMS	TRICHLOROFLUOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34504*GMS	1,1-DICHLOROETHYLENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34499*GMS	1,1-DICHLOROETHANE	UG/KG-DRY	ND

Section 4 (cont'd)

ESE BATCH : G26658

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/09/92	MB*QC*0311	96464*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/KG	ND
03/09/92	MB*QC*0311	97201*GMS	DIETHYL ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34318*GMS	CHLOROFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34534*GMS	1,2-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	75078*GMS	METHYL ETHYL KETONE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34509*GMS	1,1,1-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34299*GMS	CARBON TETRACHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34330*GMS	BROMODICHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34544*GMS	1,2-DICHLOROPROPANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34702*GMS	CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34487*GMS	TRICHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34309*GMS	DIBROMOCHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34237*GMS	BENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34514*GMS	1,1,2-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34579*GMS	2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34697*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34290*GMS	BROMOFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0311	75169*GMS	METHYLISOBUTYLKETONE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34478*GMS	TETRACHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34519*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34483*GMS	TOLUENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34304*GMS	CHLOROBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	34374*GMS	ETHYLBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0311	45510*GMS	XYLENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0311	98578*GMS	DICHLOROBENZENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34421*GMS	CHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34416*GMS	BROMOMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34495*GMS	VINYL CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34314*GMS	CHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34426*GMS	METHYLENE CHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	78544*GMS	CARBON DISULFIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34491*GMS	TRICHLOROFLUOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34504*GMS	1,1-DICHLOROETHYLENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34499*GMS	1,1-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	96464*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/KG	ND
03/09/92	MB*QC*0312	97201*GMS	DIETHYL ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34318*GMS	CHLOROFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34534*GMS	1,2-DICHLOROETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	75078*GMS	METHYL ETHYL KETONE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34509*GMS	1,1,1-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34299*GMS	CARBON TETRACHLORIDE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34330*GMS	BROMODICHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34544*GMS	1,2-DICHLOROPROPANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34702*GMS	CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34487*GMS	TRICHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34309*GMS	DIBROMOCHLOROMETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34237*GMS	BENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34514*GMS	1,1,2-TRICHL'ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34579*GMS	2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34697*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34290*GMS	BROMOFORM	UG/KG-DRY	ND
03/09/92	MB*QC*0312	75169*GMS	METHYLISOBUTYLKETONE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34478*GMS	TETRACHLOROETHENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34519*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34483*GMS	TOLUENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34304*GMS	CHLOROBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	34374*GMS	ETHYLBENZENE	UG/KG-DRY	ND
03/09/92	MB*QC*0312	45510*GMS	XYLENE,TOTAL	UG/KG-DRY	ND
03/09/92	MB*QC*0312	98578*GMS	DICHLOROBENZENE,TOTAL	UG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/09/92	SP1*QC*311	34504*GMS	1,1-DICHLOROETHYLENE	90	59-172	UG/KG-DRY	50	45
03/09/92	SP1*QC*311	34487*GMS	TRICHLOROETHENE	96	62-137	UG/KG-DRY	50	48
03/09/92	SP1*QC*311	34237*GMS	BENZENE	94	66-142	UG/KG-DRY	50	47
03/09/92	SP1*QC*311	34483*GMS	TOLUENE	92	59-139	UG/KG-DRY	50	46
03/09/92	SP1*QC*311	34304*GMS	CHLOROBENZENE	94	60-133	UG/KG-DRY	50	47
03/09/92	SP1*QC*1	34504*GMS	1,1-DICHLOROETHYLENE	88	59-172	UG/KG-DRY	50	44
03/09/92	SP1*QC*1	34487*GMS	TRICHLOROETHENE	102	62-137	UG/KG-DRY	50	51
03/09/92	SP1*QC*1	34237*GMS	BENZENE	100	66-142	UG/KG-DRY	50	50
03/09/92	SP1*QC*1	34483*GMS	TOLUENE	102	59-139	UG/KG-DRY	50	51
03/09/92	SP1*QC*1	34304*GMS	CHLOROBENZENE	102	60-133	UG/KG-DRY	50	51

ESE BATCH : G26658

Section 4 (cont'd)

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/09/92	SPM1*HUNTS1*22	34504*GMS	1,1-DICHLOROETHYLENE	112	59-172	0.0	UG/KG-DRY	58	65	
03/09/92	SPM1*HUNTS1*22	34487*GMS	TRICHLOROETHENE	107	62-137	0.0	UG/KG-DRY	58	62	
03/09/92	SPM1*HUNTS1*22	34237*GMS	BENZENE	112	66-142	0.0	UG/KG-DRY	58	65	
03/09/92	SPM1*HUNTS1*22	34483*GMS	TOLUENE	114	59-139	0.0	UG/KG-DRY	58	66	
03/09/92	SPM1*HUNTS1*22	34304*GMS	CHLOROBENZENE	112	60-133	0.0	UG/KG-DRY	58	65	
03/09/92	SPM2*HUNTS1*22	34504*GMS	1,1-DICHLOROETHYLENE	109	59-172	0.0	UG/KG-DRY	58	63	0.0
03/09/92	SPM2*HUNTS1*22	34487*GMS	TRICHLOROETHENE	105	62-137	0.0	UG/KG-DRY	58	61	0.0
03/09/92	SPM2*HUNTS1*22	34237*GMS	BENZENE	114	66-142	0.0	UG/KG-DRY	58	66	0.0
03/09/92	SPM2*HUNTS1*22	34483*GMS	TOLUENE	119	59-139	0.0	UG/KG-DRY	58	69	8.7
03/09/92	SPM2*HUNTS1*22	34304*GMS	CHLOROBENZENE	114	60-133	0.0	UG/KG-DRY	58	66	0.0
03/09/92	SPM1*HUNTS1*12	34504*GMS	1,1-DICHLOROETHYLENE	91	59-172	0.0	UG/KG-DRY	56	51	
03/09/92	SPM1*HUNTS1*12	34487*GMS	TRICHLOROETHENE	91	62-137	0.0	UG/KG-DRY	56	51	
03/09/92	SPM1*HUNTS1*12	34237*GMS	BENZENE	91	66-142	0.0	UG/KG-DRY	56	51	
03/09/92	SPM1*HUNTS1*12	34483*GMS	TOLUENE	93	59-139	0.0	UG/KG-DRY	56	52	
03/09/92	SPM1*HUNTS1*12	34304*GMS	CHLOROBENZENE	91	60-133	0.0	UG/KG-DRY	56	51	
03/09/92	SPM2*HUNTS1*12	34504*GMS	1,1-DICHLOROETHYLENE	89	59-172	0.0	UG/KG-DRY	56	50	1.1
03/09/92	SPM2*HUNTS1*12	34487*GMS	TRICHLOROETHENE	91	62-137	0.0	UG/KG-DRY	56	51	1.1
03/09/92	SPM2*HUNTS1*12	34237*GMS	BENZENE	93	66-142	0.0	UG/KG-DRY	56	52	3.2
03/09/92	SPM2*HUNTS1*12	34483*GMS	TOLUENE	95	59-139	0.0	UG/KG-DRY	56	53	2.1
03/09/92	SPM2*HUNTS1*12	34304*GMS	CHLOROBENZENE	91	60-133	0.0	UG/KG-DRY	56	51	1.1

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/09/92	MB*QC*0309	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/09/92	MB*QC*0309	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	50	100	81-117
03/09/92	MB*QC*0309	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	50	100	74-121
03/09/92	DA*HUNTS1*22	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	46	92	70-121
03/09/92	DA*HUNTS1*22	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	53	110	81-117
03/09/92	DA*HUNTS1*22	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	45	90	74-121
03/09/92	SPM1*HUNTS1*22	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	47	94	70-121
03/09/92	SPM1*HUNTS1*22	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	53	110	81-117
03/09/92	SPM1*HUNTS1*22	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	47	94	74-121
03/09/92	SPM2*HUNTS1*22	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/09/92	SPM2*HUNTS1*22	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	57	110	81-117
03/09/92	SPM2*HUNTS1*22	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	45	90	74-121
03/09/92	DA*HUNTS1*1	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/09/92	DA*HUNTS1*1	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	53	110	81-117
03/09/92	DA*HUNTS1*1	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	46	92	74-121
03/09/92	DA*HUNTS1*3	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	47	94	70-121
03/09/92	DA*HUNTS1*3	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	56	110	81-117
03/09/92	DA*HUNTS1*3	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	47	94	74-121
03/09/92	DA*HUNTS1*4	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	46	92	70-121
03/09/92	DA*HUNTS1*4	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	55	110	81-117
03/09/92	DA*HUNTS1*4	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	46	92	74-121
03/09/92	DA*HUNTS1*7	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	44	88	70-121
03/09/92	DA*HUNTS1*7	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	49	98	81-117
03/09/92	DA*HUNTS1*7	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	44	88	74-121
03/09/92	MB*QC*0309B	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/09/92	MB*QC*0309B	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	49	98	81-117
03/09/92	MB*QC*0309B	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121
03/09/92	DA*HUNTS1*15	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/09/92	DA*HUNTS1*15	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	53	110	81-117
03/09/92	DA*HUNTS1*15	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	47	94	74-121
03/09/92	DA*HUNTS1*18	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	49	98	70-121
03/09/92	DA*HUNTS1*18	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	52	100	81-117
03/09/92	DA*HUNTS1*18	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	50	100	74-121
03/10/92	DA*HUNTS1*19	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/10/92	DA*HUNTS1*19	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	57	110	81-117
03/10/92	DA*HUNTS1*19	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	42	84	74-121
03/10/92	DA*HUNTS1*23	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	49	98	70-121
03/10/92	DA*HUNTS1*23	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	61	120	81-117
03/10/92	DA*HUNTS1*23	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	41	82	74-121
03/10/92	DA*HUNTS1*26	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	49	98	70-121
03/10/92	DA*HUNTS1*26	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/10/92	DA*HUNTS1*26	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121
03/10/92	DA*HUNTS1*28	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	47	94	70-121
03/10/92	DA*HUNTS1*28	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	34	68	81-117
03/10/92	DA*HUNTS1*28	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	94	190	74-121
03/10/92	DA*HUNTS1*29	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/10/92	DA*HUNTS1*29	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	47	94	81-117
03/10/92	DA*HUNTS1*29	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	55	110	74-121
03/10/92	DA*HUNTS1*30	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121

ESE BATCH : G26658

Environmental Science and Engineering Analytical Services

Computer QC Checks

Section 5.

Batch No.: G26658 Analysis Date: 03/09/92 Analyst: GREGORY LAMB

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		
Surrogate present?	X		
Surrogate within acceptance criteria?		X	97026*SUR ______
			97027*SUR ______

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

PROB.:SURROGATE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:TOLUENE D8 AND BFB OUT OF CRITERIA ON 5 OF 24 SAMPLES.
THESE SAMPLES WERE VERY DIRTY AND MATRIX EFFECTS CAUSED
ERRATIC RECOVERIES./GGL

ESE BATCH : G26598
CLASSIFICATION : PERCENT MOISTURE - ASTM D2216

QC TYPE : FDER/SW
ANALYST : ERIC ANDERSON
EXTRACTOR : ERIC ANDERSON
DATA ENTRY : ERIC ANDERSON

REPORT DATE/TIME : 04/22/92 10:22:53
ANALYSIS DATE : 03/13/92
EXTRACT DATE : 03/12/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTS1	39240186 0201	COE - FT. STEWART	SUZANNE WOODWARD
WRITS1	39240186 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITS1*1	WS-1		
WRITS1*2	WS-2		
WRITS1*3	WS-3		
WRITS1*4	WS-4		
WRITS1*5	WS-5		
WRITS1*6	WS-6		
WRITS1*7	WS-7		
WRITS1*8	WS-8		
WRITS1*9	WS-9		
WRITS1*10	WS-DUP		
WRITS1*12	WSD-1		
WRITS1*13	WSD-2		
WRITS1*14	WSD-DUP		
HUNTS1*1	HS-1		
HUNTS1*2	HS-2		
HUNTS1*3	HS-3		
HUNTS1*4	HS-4		
HUNTS1*7	HS-7		
HUNTS1*8	HS-8		
HUNTS1*9	HS-9		
HUNTS1*10	HS-10		
HUNTS1*11	HS-11		
HUNTS1*12	HS-12		
HUNTS1*13	HS-13		
HUNTS1*14	HS-14		
HUNTS1*15	HS-15		
HUNTS1*16	HS-16		
HUNTS1*17	HS-17		
HUNTS1*18	HS-18		
HUNTS1*19	HS-19		
HUNTS1*22	HS-DUP		
HUNTS1*23	HS-DUP		
HUNTS1*26	HSD-1		
HUNTS1*27	HSD-2		
HUNTS1*28	HSD-3		
HUNTS1*29	HSD-4		
HUNTS1*30	HSD-DUP		

ESE BATCH : G26598

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/13/92	MB*QC*1	96041*0	PAN WEIGHT	GM	1.00530
03/13/92	MB*QC*1	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	1.00530
03/13/92	MB*QC*1	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	1.00450
03/13/92	MB*QC*1	70320*1	MOISTURE	%WET WT	ND
03/13/92	MB*QC*2	96041*0	PAN WEIGHT	GM	1.00040
03/13/92	MB*QC*2	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	1.00040
03/13/92	MB*QC*2	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	0.99950
03/13/92	MB*QC*2	70320*1	MOISTURE	%WET WT	ND
03/13/92	MB*QC*3	96041*0	PAN WEIGHT	GM	1.00920
03/13/92	MB*QC*3	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	1.00920
03/13/92	MB*QC*3	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	1.00830
03/13/92	MB*QC*3	70320*1	MOISTURE	%WET WT	ND
03/13/92	MB*QC*4	96041*0	PAN WEIGHT	GM	1.01130
03/13/92	MB*QC*4	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	1.01130
03/13/92	MB*QC*4	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	1.01030
03/13/92	MB*QC*4	70320*1	MOISTURE	%WET WT	ND

Replicate Analysis Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	REP #1	REP #2	RPD	RPD CRIT
03/13/92	RP*WRITS1*6	96041*0	PAN WEIGHT	GM	0.99860	1.00070	0.21007	N/A
03/13/92	RP*WRITS1*6	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	18.30270	18.99430	3.70861	N/A
03/13/92	RP*WRITS1*6	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	15.54250	15.64860	0.68032	N/A
03/13/92	RP*WRITS1*6	70320*1	MOISTURE	%WET WT	16.0	18.6	15.0	23
03/13/92	RP*WRITS1*7	96041*0	PAN WEIGHT	GM	1.00220	1.00370	0.14956	N/A
03/13/92	RP*WRITS1*7	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	18.78330	18.71730	0.35199	N/A
03/13/92	RP*WRITS1*7	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	16.19200	15.98220	1.30415	N/A
03/13/92	RP*WRITS1*7	70320*1	MOISTURE	%WET WT	14.6	15.4	5.3	23
03/13/92	RP*HUNTS1*1	96041*0	PAN WEIGHT	GM	0.99930	0.99830	0.10012	N/A
03/13/92	RP*HUNTS1*1	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	17.81020	17.82910	0.10606	N/A
03/13/92	RP*HUNTS1*1	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	16.07000	16.07110	0.00684	N/A
03/13/92	RP*HUNTS1*1	70320*1	MOISTURE	%WET WT	10.4	10.4	0.0	23
03/13/92	RP*HUNTS1*15	96041*0	PAN WEIGHT	GM	1.00540	1.00500	0.03979	N/A
03/13/92	RP*HUNTS1*15	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	17.88030	17.89780	0.09783	N/A
03/13/92	RP*HUNTS1*15	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	16.47950	16.46120	0.11111	N/A
03/13/92	RP*HUNTS1*15	70320*1	MOISTURE	%WET WT	8.3	8.5	2.4	23
03/13/92	RP*HUNTS1*26	96041*0	PAN WEIGHT	GM	1.01150	1.01360	0.20740	N/A
03/13/92	RP*HUNTS1*26	96042*0	PAN+SAMPLE WEIGHT(WET)	GM	18.53870	18.69640	0.84705	N/A
03/13/92	RP*HUNTS1*26	96043*0	PAN+SAMPLE WEIGHT(DRY)	GM	13.86800	13.75510	0.81743	N/A
03/13/92	RP*HUNTS1*26	70320*1	MOISTURE	%WET WT	26.6	27.9	4.8	23

ESE BATCH - : G26598
Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26598 Analysis Date: 03/13/92 Analyst: ERIC ANDERSON

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Sample replicate present?	X		
Sample replicate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26649
CLASSIFICATION : VOLATILE ORGANIC CMPDS-E624

QC TYPE : FDER/SW
ANALYST : KELLY RUSSELL-KELLER
EXTRACTOR :
DATA ENTRY : TODD ROMERO

REPORT DATE/TIME : 04/22/92 10:04:01
ANALYSIS DATE : 03/16/92
EXTRACT DATE :

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE
USATHAMA LOT: INST

BATCH NOTES
DOWNLOAD FILE WRITWKK1

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTW1	3924018G 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITW1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITW1*13	TRPBLK	03/16/92	10:40AM
WRITW1*14	TRPBLK	03/16/92	11:10AM
WRITW1*11	EQPBLK	03/16/92	11:41AM
WRITW1*1	WMW-1	03/16/92	12:12PM
WRITW1*2	WMW-2	03/16/92	02:16PM
WRITW1*3	WMW-3	03/16/92	02:47PM
WRITW1*4	WMW-4	03/16/92	03:18PM
WRITW1*7	WMW-7	03/16/92	04:50PM
WRITW1*8	WMW-DUP	03/16/92	05:21PM
WRITW1*10	WSOURCE	03/16/92	05:51PM
HUNTW1*1	HMW-1	03/16/92	06:22PM
HUNTW1*2	HMW-2	03/16/92	06:53PM
HUNTW1*3	HMW-3	03/16/92	07:24PM
HUNTW1*4	HMW-4	03/16/92	07:55PM
HUNTW1*5	HMW-5	03/16/92	08:26PM

ESE BATCH : G26649

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/16/92	MB*QC*0316	34418*GMS	CHLOROMETHANE	UG/L	ND
03/16/92	MB*QC*0316	34413*GMS	BROMOMETHANE	UG/L	ND
03/16/92	MB*QC*0316	39175*GMS	VINYL CHLORIDE	UG/L	ND
03/16/92	MB*QC*0316	34311*GMS	CHLOROETHANE	UG/L	ND
03/16/92	MB*QC*0316	34423*GMS	METHYLENE CHLORIDE	UG/L	ND
03/16/92	MB*QC*0316	81576*GMS	DIETHYL ETHER, TOTAL	UG/L	ND
03/16/92	MB*QC*0316	77041*GMS	CARBON DISULFIDE	UG/L	ND
03/16/92	MB*QC*0316	34501*GMS	1,1-DICHLOROETHYLENE	UG/L	ND
03/16/92	MB*QC*0316	34488*GMS	TRICHLOROFLUORO- METHANE	UG/L	ND
03/16/92	MB*QC*0316	34496*GMS	1,1-DICHLOROETHANE	UG/L	ND
03/16/92	MB*QC*0316	96463*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/L	ND
03/16/92	MB*QC*0316	32106*GMS	CHLOROFORM	UG/L	ND
03/16/92	MB*QC*0316	34531*GMS	1,2-DICHLOROETHANE	UG/L	ND
03/16/92	MB*QC*0316	81595*GMS	METHYL ETHYL KETONE	UG/L	ND
03/16/92	MB*QC*0316	34506*GMS	1,1,1-TRICHL'ETHANE	UG/L	ND
03/16/92	MB*QC*0316	32102*GMS	CARBON TETRACHLORIDE	UG/L	ND
03/16/92	MB*QC*0316	34576*GMS	2-CHLOROETHYLVINYL- ETHER	UG/L	ND
03/16/92	MB*QC*0316	32101*GMS	BROMODICHLOROMETHANE	UG/L	ND
03/16/92	MB*QC*0316	34541*GMS	1,2-DICHLOROPROPANE	UG/L	ND
03/16/92	MB*QC*0316	34704*GMS	CIS-1,3-DICHLORO- PROPENE	UG/L	ND
03/16/92	MB*QC*0316	39180*GMS	TRICHLOROETHENE	UG/L	ND
03/16/92	MB*QC*0316	32105*GMS	DIBROMOCHLOROMETHANE	UG/L	ND
03/16/92	MB*QC*0316	34511*GMS	1,1,2-TRICHL'ETHANE	UG/L	ND
03/16/92	MB*QC*0316	34030*GMS	BENZENE	UG/L	ND
03/16/92	MB*QC*0316	34699*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/L	ND
03/16/92	MB*QC*0316	32104*GMS	BROMOFORM	UG/L	ND
03/16/92	MB*QC*0316	81596*GMS	METHYL ISOBUT'KETONE	UG/L	ND
03/16/92	MB*QC*0316	34475*GMS	TETRACHLOROETHENE	UG/L	ND
03/16/92	MB*QC*0316	34516*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/L	ND
03/16/92	MB*QC*0316	34010*GMS	TOLUENE	UG/L	ND
03/16/92	MB*QC*0316	34301*GMS	CHLOROBENZENE	UG/L	ND
03/16/92	MB*QC*0316	34371*GMS	ETHYLBENZENE	UG/L	ND
03/16/92	MB*QC*0316	81551*GMS	XYLENES,TOTAL	UG/L	ND
03/16/92	MB*QC*0316	81524*GMS	DICHLOROBENZENE,TOT.	UG/L	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/16/92	SP1*QC*1	34501*GMS	1,1-DICHLOROETHYLENE	80	61-145	UG/L	50	40
03/16/92	SP1*QC*1	39180*GMS	TRICHLOROETHENE	102	71-120	UG/L	50	51
03/16/92	SP1*QC*1	34030*GMS	BENZENE	102	76-127	UG/L	50	51
03/16/92	SP1*QC*1	34010*GMS	TOLUENE	102	76-125	UG/L	50	51
03/16/92	SP1*QC*1	34301*GMS	CHLOROBENZENE	102	75-130	UG/L	50	51

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/16/92	SPM1*WRITW1*1	34501*GMS	1,1-DICHLOROETHYLENE	84	61-145	0.0	UG/L	50	42	
03/16/92	SPM1*WRITW1*1	39180*GMS	TRICHLOROETHENE	106	71-120	0.0	UG/L	50	53	
03/16/92	SPM1*WRITW1*1	34030*GMS	BENZENE	108	76-127	4.7	UG/L	50	54	
03/16/92	SPM1*WRITW1*1	34010*GMS	TOLUENE	106	76-125	0.0	UG/L	50	53	
03/16/92	SPM1*WRITW1*1	34301*GMS	CHLOROBENZENE	106	75-130	0.0	UG/L	50	53	
03/16/92	SPM2*WRITW1*1	34501*GMS	1,1-DICHLOROETHYLENE	84	61-145	0.0	UG/L	50	42	0.0
03/16/92	SPM2*WRITW1*1	39180*GMS	TRICHLOROETHENE	110	71-120	0.0	UG/L	50	55	0.0
03/16/92	SPM2*WRITW1*1	34030*GMS	BENZENE	110	76-127	4.7	UG/L	50	55	0.0
03/16/92	SPM2*WRITW1*1	34010*GMS	TOLUENE	110	76-125	0.0	UG/L	50	55	0.0
03/16/92	SPM2*WRITW1*1	34301*GMS	CHLOROBENZENE	108	75-130	0.0	UG/L	50	54	0.0

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/16/92	MB*QC*0316	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	MB*QC*0316	98810*SUR	TOLUENE-D(8)	UG/L	50	51	100	85-115
03/16/92	MB*QC*0316	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	51	100	86-115
03/16/92	DA*WRITW1*13	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*WRITW1*13	98810*SUR	TOLUENE-D(8)	UG/L	50	50	100	85-115
03/16/92	DA*WRITW1*13	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*WRITW1*14	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	45	90	76-114
03/16/92	DA*WRITW1*14	98810*SUR	TOLUENE-D(8)	UG/L	50	50	100	85-115
03/16/92	DA*WRITW1*14	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	47	94	86-115
03/16/92	DA*WRITW1*11	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/16/92	DA*WRITW1*11	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*WRITW1*11	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*WRITW1*1	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*WRITW1*1	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*WRITW1*1	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	SPM1*WRITW1*1	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114

ESE BATCH : G26649

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/16/92	SPM1*WRITW1*1	98810*SUR	TOLUENE-D(8)	UG/L	50	47	94	85-115
03/16/92	SPM1*WRITW1*1	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	SPM2*WRITW1*1	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	51	100	76-114
03/16/92	SPM2*WRITW1*1	98810*SUR	TOLUENE-D(8)	UG/L	50	51	100	85-115
03/16/92	SPM2*WRITW1*1	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	52	100	86-115
03/16/92	SP1*QC*1	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	50	100	76-114
03/16/92	SP1*QC*1	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	SP1*QC*1	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/16/92	DA*WRITW1*2	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*WRITW1*2	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*WRITW1*2	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*WRITW1*3	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/16/92	DA*WRITW1*3	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/16/92	DA*WRITW1*3	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	48	96	86-115
03/16/92	DA*WRITW1*4	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*WRITW1*4	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*WRITW1*4	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	48	96	86-115
03/16/92	DA*WRITW1*7	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/16/92	DA*WRITW1*7	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*WRITW1*7	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*WRITW1*8	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*WRITW1*8	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*WRITW1*8	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*WRITW1*10	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/16/92	DA*WRITW1*10	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/16/92	DA*WRITW1*10	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	48	96	86-115
03/16/92	DA*HUNTW1*1	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	50	100	76-114
03/16/92	DA*HUNTW1*1	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*HUNTW1*1	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*HUNTW1*2	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	50	100	76-114
03/16/92	DA*HUNTW1*2	98810*SUR	TOLUENE-D(8)	UG/L	50	50	100	85-115
03/16/92	DA*HUNTW1*2	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/16/92	DA*HUNTW1*3	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*HUNTW1*3	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/16/92	DA*HUNTW1*3	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*HUNTW1*4	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/16/92	DA*HUNTW1*4	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/16/92	DA*HUNTW1*4	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/16/92	DA*HUNTW1*5	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/16/92	DA*HUNTW1*5	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/16/92	DA*HUNTW1*5	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115

ESE BATCH : G26649

Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26649 Analysis Date: 03/16/92 Analyst: KELLY RUSSELL-KELLER

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		
Surrogate present?	X		
Surrogate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26696
CLASSIFICATION : MERCURY-SW7471

QC TYPE : FDER/SW
ANALYST : LISA SWAYZE
EXTRACTOR : LISA SWAYZE
DATA ENTRY : LISA SWAYZE

REPORT DATE/TIME : 04/22/92 10:26:09
ANALYSIS DATE : 03/18/92
EXTRACT DATE : 03/17/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTS1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD
WRITS1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
HUNTS1*1	HS-1		
HUNTS1*2	HS-2		
HUNTS1*3	HS-3		
HUNTS1*4	HS-4		
HUNTS1*7	HS-7		
HUNTS1*8	HS-8		
HUNTS1*9	HS-9	03/24/92	
HUNTS1*10	HS-10		
HUNTS1*11	HS-11		
HUNTS1*12	HS-12		
HUNTS1*13	HS-13		
HUNTS1*14	HS-14		
HUNTS1*15	HS-15		
HUNTS1*16	HS-16		
HUNTS1*17	HS-17		
HUNTS1*18	HS-18		
HUNTS1*19	HS-19		
HUNTS1*22	HS-DUP		
HUNTS1*23	HS-DUP		
HUNTS1*26	HSD-1		
HUNTS1*27	HSD-2		
HUNTS1*28	HSD-3		
HUNTS1*29	HSD-4		
HUNTS1*30	HSD-DUP		
WRITS1*1	WS-1		
WRITS1*2	WS-2		
WRITS1*3	WS-3		
WRITS1*4	WS-4		
WRITS1*5	WS-5		
WRITS1*6	WS-6		
WRITS1*7	WS-7		
WRITS1*8	WS-8		
WRITS1*9	WS-9		
WRITS1*10	WS-DUP		
WRITS1*12	WSD-1		
WRITS1*13	WSD-2		
WRITS1*14	WSD-DUP		

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/18/92	MB*QC*1	71921*CVAA	MERCURY,SED	MG/KG-DRY	ND
03/18/92	MB*QC*2	71921*CVAA	MERCURY,SED	MG/KG-DRY	ND
03/18/92	MB*QC*3	71921*CVAA	MERCURY,SED	MG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/18/92	SP*QC*1	71921*CVAA	MERCURY,SED	104.1	83-125	MG/KG-DRY	2.46	2.56
03/18/92	SP*QC*2	71921*CVAA	MERCURY,SED	109.2	83-125	MG/KG-DRY	2.40	2.62
03/18/92	SP*QC*3	71921*CVAA	MERCURY,SED	104.0	83-125	MG/KG-DRY	2.48	2.58

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/18/92	SPM1*HUNTS1*1	71921*CVAA	MERCURY,SED	108.6	83-125	0.0	MG/KG-DRY	2.68	2.91	
03/18/92	SPM2*HUNTS1*1	71921*CVAA	MERCURY,SED	116.4	83-125	0.0	MG/KG-DRY	2.75	3.20	6.22
03/18/92	SPM1*HUNTS1*9	71921*CVAA	MERCURY,SED	87.0	83-125	0.0	MG/KG-DRY	2.76	2.40	
03/18/92	SPM2*HUNTS1*9	71921*CVAA	MERCURY,SED	84.8	83-125	0.0	MG/KG-DRY	2.69	2.28	2.56
03/18/92	SPM1*WRITS1*1	71921*CVAA	MERCURY,SED	110.0	83-125	0.0	MG/KG-DRY	2.80	3.08	
03/18/92	SPM2*WRITS1*1	71921*CVAA	MERCURY,SED	108.7	83-125	0.0	MG/KG-DRY	2.87	3.12	0.913

ESE BATCH : G26696

Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26696 Analysis Date: 03/18/92 Analyst: LISA SWAYZE

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
No. of calibration standards present acceptable?	X		
Curve correlation coefficient >= 0.995?	X		
Calibration curve y-intercept < curve detection limit?	X		
Sample responses within highest standard response?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26699
CLASSIFICATION : ICAP METALS-SW6010

QC TYPE : FDER/SW
ANALYST : GARRY PRICE
EXTRACTOR : DAVID NICHOLS
DATA ENTRY : ICAP UPLOAD

REPORT DATE/TIME : 04/22/92 10:01:24
ANALYSIS DATE : 03/18/92
EXTRACT DATE : 03/17/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTWI	3924018G 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITWI	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITWI*1	WMW-1	03/18/92	03:04PM
WRITWI*2	WMW-2	03/18/92	03:06PM
WRITWI*3	WMW-3	03/18/92	03:08PM
WRITWI*4	WMW-4	03/18/92	03:11PM
WRITWI*5	WMW-5	03/18/92	03:13PM
WRITWI*6	WMW-6	03/18/92	03:15PM
WRITWI*7	WMW-7	03/18/92	03:17PM
WRITWI*8	WMW-DUP	03/18/92	03:30PM
WRITWI*10	WSOURCE	03/18/92	03:33PM
WRITWI*11	EQPBLK	03/18/92	03:36PM
HUNTWI*1	HMW-1	03/18/92	03:53PM
HUNTWI*2	HMW-2	03/18/92	03:57PM
HUNTWI*3	HMW-3	03/18/92	03:59PM
HUNTWI*4	HMW-4	03/18/92	04:02PM
HUNTWI*5	HMW-5	03/18/92	04:06PM
HUNTWI*6	HMW-6	03/18/92	04:08PM
HUNTWI*7	HMW-7	03/18/92	04:11PM
HUNTWI*8	HMW-8	03/18/92	04:14PM
HUNTWI*9	HMW-9	03/18/92	04:16PM
HUNTWI*10	HMW-DUP	03/18/92	04:30PM
HUNTWI*12	HSOURCE	03/18/92	04:33PM
HUNTWI*16	EQPBLK	03/18/92	04:35PM

ESE BATCH : G26699

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/18/92	MB*QC*1	1077*ICAP	SILVER,TOTAL	UG/L	ND
03/18/92	MB*QC*1	1007*ICAP	BARIUM,TOTAL	UG/L	ND
03/18/92	MB*QC*1	1027*ICAP	CADMIUM,TOTAL	UG/L	ND
03/18/92	MB*QC*1	1034*ICAP	CHROMIUM,TOTAL	UG/L	ND
03/18/92	MB*QC*1	1051*ICAP	LEAD,TOTAL	UG/L	ND
03/18/92	MB*QC*2	1077*ICAP	SILVER,TOTAL	UG/L	ND
03/18/92	MB*QC*2	1007*ICAP	BARIUM,TOTAL	UG/L	ND
03/18/92	MB*QC*2	1027*ICAP	CADMIUM,TOTAL	UG/L	ND
03/18/92	MB*QC*2	1034*ICAP	CHROMIUM,TOTAL	UG/L	ND
03/18/92	MB*QC*2	1051*ICAP	LEAD,TOTAL	UG/L	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/18/92	SP1*QC*1	1077*ICAP	SILVER,TOTAL	95.0	73-107	UG/L	50.0	47.5
03/18/92	SP1*QC*1	1007*ICAP	BARIUM,TOTAL	101.0	86-106	UG/L	2000	2020
03/18/92	SP1*QC*1	1027*ICAP	CADMIUM,TOTAL	93.6	80-108	UG/L	50.0	46.8
03/18/92	SP1*QC*1	1034*ICAP	CHROMIUM,TOTAL	98.5	79-109	UG/L	200	197
03/18/92	SP1*QC*1	1051*ICAP	LEAD,TOTAL	95.0	79-109	UG/L	500	475
03/18/92	SP2*QC*2	1077*ICAP	SILVER,TOTAL	96.6	73-107	UG/L	50.0	48.3
03/18/92	SP2*QC*2	1007*ICAP	BARIUM,TOTAL	101.0	86-106	UG/L	2000	2020
03/18/92	SP2*QC*2	1027*ICAP	CADMIUM,TOTAL	98.8	80-108	UG/L	50.0	49.4
03/18/92	SP2*QC*2	1034*ICAP	CHROMIUM,TOTAL	99.5	79-109	UG/L	200	199
03/18/92	SP2*QC*2	1051*ICAP	LEAD,TOTAL	98.0	79-109	UG/L	500	490

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/18/92	SPM1*WRITW1*7	1077*ICAP	SILVER,TOTAL	96.0	73-107	0.0	UG/L	50.0	48.0	
03/18/92	SPM1*WRITW1*7	1007*ICAP	BARIUM,TOTAL	103.5	86-106	129	UG/L	2000	2070	
03/18/92	SPM1*WRITW1*7	1027*ICAP	CADMIUM,TOTAL	100.8	80-108	1.5	UG/L	50.0	50.4	
03/18/92	SPM1*WRITW1*7	1034*ICAP	CHROMIUM,TOTAL	102.5	79-109	16.7	UG/L	200	205	
03/18/92	SPM1*WRITW1*7	1051*ICAP	LEAD,TOTAL	101.0	79-109	2.2	UG/L	500	505	
03/18/92	SPM2*WRITW1*7	1077*ICAP	SILVER,TOTAL	92.6	73-107	0.0	UG/L	50.0	46.3	3.6
03/18/92	SPM2*WRITW1*7	1007*ICAP	BARIUM,TOTAL	102.0	86-106	129	UG/L	2000	2040	1.9
03/18/92	SPM2*WRITW1*7	1027*ICAP	CADMIUM,TOTAL	96.8	80-108	1.5	UG/L	50.0	48.4	4.2
03/18/92	SPM2*WRITW1*7	1034*ICAP	CHROMIUM,TOTAL	100.0	79-109	16.7	UG/L	200	200	3.0
03/18/92	SPM2*WRITW1*7	1051*ICAP	LEAD,TOTAL	100.4	79-109	2.2	UG/L	500	502	1.0
03/18/92	SPM1*HUNTW1*9	1077*ICAP	SILVER,TOTAL	92.6	73-107	0.0	UG/L	50.0	46.3	
03/18/92	SPM1*HUNTW1*9	1007*ICAP	BARIUM,TOTAL	102.5	86-106	113	UG/L	2000	2050	
03/18/92	SPM1*HUNTW1*9	1027*ICAP	CADMIUM,TOTAL	94.6	80-108	0.0	UG/L	50.0	47.3	
03/18/92	SPM1*HUNTW1*9	1034*ICAP	CHROMIUM,TOTAL	98.5	79-109	9.1	UG/L	200	197	
03/18/92	SPM1*HUNTW1*9	1051*ICAP	LEAD,TOTAL	102.0	79-109	1.1	UG/L	500	510	
03/18/92	SPM2*HUNTW1*9	1077*ICAP	SILVER,TOTAL	94.8	73-107	0.0	UG/L	50.0	47.4	2.3
03/18/92	SPM2*HUNTW1*9	1007*ICAP	BARIUM,TOTAL	103.0	86-106	113	UG/L	2000	2060	1.0
03/18/92	SPM2*HUNTW1*9	1027*ICAP	CADMIUM,TOTAL	97.2	80-108	0.0	UG/L	50.0	48.6	2.7
03/18/92	SPM2*HUNTW1*9	1034*ICAP	CHROMIUM,TOTAL	99.0	79-109	9.1	UG/L	200	198	0.5
03/18/92	SPM2*HUNTW1*9	1051*ICAP	LEAD,TOTAL	103.0	79-109	1.1	UG/L	500	515	1.0

ESE BATCH ~ : G26699

Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26699 Analysis Date: 03/18/92 Analyst: GARRY PRICE

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26705
CLASSIFICATION : VOLATILE ORGANIC CMPDS-E624

QC TYPE : FDER/SW
ANALYST : DANIEL LUCAS
EXTRACTOR :
DATA ENTRY : TODD ROMERO

REPORT DATE/TIME : 04/22/92 10:06:29
ANALYSIS DATE : 03/17/92
EXTRACT DATE :

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : BY CONCENTRATION

BATCH NOTES
DOWNLOAD FILE HUNTWIDL

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTWI	39240186 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITWI	39240186 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
HUNTWI*13	TRPBLK	03/17/92	10:50AM
HUNTWI*16	EQPBLK	03/17/92	11:21AM
HUNTWI*8	HMW-8	03/17/92	11:51AM
HUNTWI*10	HMW-DUP	03/17/92	02:57PM
HUNTWI*12	HSOURCE	03/17/92	03:28PM
WRITWI*5	WMW-5	03/17/92	04:29PM
WRITWI*6	WMW-6	03/17/92	04:58PM
HUNTWI*7	HMW-7	03/17/92	05:30PM
HUNTWI*9	HMW-9	03/17/92	06:00PM
HUNTWI*6	HMW-6	03/17/92	08:33PM

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/17/92	MB*QC*0317	34418*GMS	CHLOROMETHANE	UG/L	ND
03/17/92	MB*QC*0317	34413*GMS	BROMOMETHANE	UG/L	ND
03/17/92	MB*QC*0317	39175*GMS	VINYL CHLORIDE	UG/L	ND
03/17/92	MB*QC*0317	34311*GMS	CHLOROETHANE	UG/L	ND
03/17/92	MB*QC*0317	34423*GMS	METHYLENE CHLORIDE	UG/L	ND
03/17/92	MB*QC*0317	81576*GMS	DIETHYL ETHER, TOTAL	UG/L	ND
03/17/92	MB*QC*0317	77041*GMS	CARBON DISULFIDE	UG/L	ND
03/17/92	MB*QC*0317	34501*GMS	1,1-DICHLOROETHYLENE	UG/L	ND
03/17/92	MB*QC*0317	34488*GMS	TRICHLOROFLUORO- METHANE	UG/L	ND
03/17/92	MB*QC*0317	34496*GMS	1,1-DICHLOROETHANE	UG/L	ND
03/17/92	MB*QC*0317	96463*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/L	ND
03/17/92	MB*QC*0317	32106*GMS	CHLOROFORM	UG/L	0.36
03/17/92	MB*QC*0317	34531*GMS	1,2-DICHLOROETHANE	UG/L	ND
03/17/92	MB*QC*0317	81595*GMS	METHYL ETHYL KETONE	UG/L	ND
03/17/92	MB*QC*0317	34506*GMS	1,1,1-TRICHL'ETHANE	UG/L	ND
03/17/92	MB*QC*0317	32102*GMS	CARBON TETRACHLORIDE	UG/L	ND
03/17/92	MB*QC*0317	34576*GMS	2-CHLOROETHYLVINYL- ETHER	UG/L	ND
03/17/92	MB*QC*0317	32101*GMS	BROMODICHLOROMETHANE	UG/L	ND
03/17/92	MB*QC*0317	34541*GMS	1,2-DICHLOROPROPANE	UG/L	ND
03/17/92	MB*QC*0317	34704*GMS	CIS-1,3-DICHLORO- PROPENE	UG/L	ND
03/17/92	MB*QC*0317	39180*GMS	TRICHLOROETHENE	UG/L	ND
03/17/92	MB*QC*0317	32105*GMS	DIBROMOCHLOROMETHANE	UG/L	ND
03/17/92	MB*QC*0317	34511*GMS	1,1,2-TRICHL'ETHANE	UG/L	ND
03/17/92	MB*QC*0317	34030*GMS	BENZENE	UG/L	ND
03/17/92	MB*QC*0317	34699*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/L	ND
03/17/92	MB*QC*0317	32104*GMS	BROMOFORM	UG/L	ND
03/17/92	MB*QC*0317	81596*GMS	METHYL ISOBUT'KETONE	UG/L	ND
03/17/92	MB*QC*0317	34475*GMS	TETRACHLOROETHENE	UG/L	ND
03/17/92	MB*QC*0317	34516*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/L	ND
03/17/92	MB*QC*0317	34010*GMS	TOLUENE	UG/L	ND
03/17/92	MB*QC*0317	34301*GMS	CHLOROBENZENE	UG/L	ND
03/17/92	MB*QC*0317	34371*GMS	ETHYLBENZENE	UG/L	ND
03/17/92	MB*QC*0317	81551*GMS	XYLENES,TOTAL	UG/L	ND
03/17/92	MB*QC*0317	81524*GMS	DICHLOROBENZENE,TOT.	UG/L	ND

ESE BATCH : G26705

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/17/92	SP1*QC*1	34501*GMS	1,1-DICHLOROETHYLENE	86	61-145	UG/L	50	43
03/17/92	SP1*QC*1	39180*GMS	TRICHLOROETHENE	100	71-120	UG/L	50	50
03/17/92	SP1*QC*1	34030*GMS	BENZENE	102	76-127	UG/L	50	51
03/17/92	SP1*QC*1	34010*GMS	TOLUENE	102	76-125	UG/L	50	51
03/17/92	SP1*QC*1	34301*GMS	CHLOROBENZENE	102	75-130	UG/L	50	51

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/17/92	SPM1*HUNTW1*8	34501*GMS	1,1-DICHLOROETHYLENE	88	61-145	0.0	UG/L	50	44	
03/17/92	SPM1*HUNTW1*8	39180*GMS	TRICHLOROETHENE	104	71-120	0.0	UG/L	50	52	
03/17/92	SPM1*HUNTW1*8	34030*GMS	BENZENE	106	76-127	3.5	UG/L	50	53	
03/17/92	SPM1*HUNTW1*8	34010*GMS	TOLUENE	104	76-125	0.0	UG/L	50	52	
03/17/92	SPM1*HUNTW1*8	34301*GMS	CHLOROBENZENE	104	75-130	0.0	UG/L	50	52	
03/17/92	SPM2*HUNTW1*8	34501*GMS	1,1-DICHLOROETHYLENE	86	61-145	0.0	UG/L	50	43	2.3
03/17/92	SPM2*HUNTW1*8	39180*GMS	TRICHLOROETHENE	106	71-120	0.0	UG/L	50	53	9.5
03/17/92	SPM2*HUNTW1*8	34030*GMS	BENZENE	108	76-127	3.5	UG/L	50	54	9.5
03/17/92	SPM2*HUNTW1*8	34010*GMS	TOLUENE	108	76-125	0.0	UG/L	50	54	9.5
03/17/92	SPM2*HUNTW1*8	34301*GMS	CHLOROBENZENE	104	75-130	0.0	UG/L	50	52	0.0

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/17/92	MB*QC*0317	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	47	94	76-114
03/17/92	MB*QC*0317	98810*SUR	TOLUENE-D(8)	UG/L	50	47	94	85-115
03/17/92	MB*QC*0317	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	48	96	86-115
03/17/92	DA*HUNTW1*13	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	DA*HUNTW1*13	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	DA*HUNTW1*13	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/17/92	DA*HUNTW1*16	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	DA*HUNTW1*16	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	DA*HUNTW1*16	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/17/92	DA*HUNTW1*8	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	DA*HUNTW1*8	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	DA*HUNTW1*8	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/17/92	SPM1*HUNTW1*8	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	47	94	76-114
03/17/92	SPM1*HUNTW1*8	98810*SUR	TOLUENE-D(8)	UG/L	50	45	90	85-115
03/17/92	SPM1*HUNTW1*8	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	48	96	86-115
03/17/92	SPM2*HUNTW1*8	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	50	100	76-114
03/17/92	SPM2*HUNTW1*8	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/17/92	SPM2*HUNTW1*8	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/17/92	SP1*QC*1	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	SP1*QC*1	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	SP1*QC*1	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/17/92	DA*HUNTW1*10	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	DA*HUNTW1*10	98810*SUR	TOLUENE-D(8)	UG/L	50	47	94	85-115
03/17/92	DA*HUNTW1*10	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/17/92	DA*HUNTW1*12	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	DA*HUNTW1*12	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/17/92	DA*HUNTW1*12	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/17/92	DA*WRITW1*5	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	50	100	76-114
03/17/92	DA*WRITW1*5	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	DA*WRITW1*5	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/17/92	DA*WRITW1*6	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	50	100	76-114
03/17/92	DA*WRITW1*6	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	DA*WRITW1*6	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/17/92	DA*HUNTW1*7	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/17/92	DA*HUNTW1*7	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/17/92	DA*HUNTW1*7	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	49	98	86-115
03/17/92	DA*HUNTW1*9	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	49	98	76-114
03/17/92	DA*HUNTW1*9	98810*SUR	TOLUENE-D(8)	UG/L	50	48	96	85-115
03/17/92	DA*HUNTW1*9	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	50	100	86-115
03/17/92	DA*HUNTW1*6	98812*SUR	1,2-DICHLOROETHANE-D(4)	UG/L	50	48	96	76-114
03/17/92	DA*HUNTW1*6	98810*SUR	TOLUENE-D(8)	UG/L	50	49	98	85-115
03/17/92	DA*HUNTW1*6	97947*SUR	BROMOFLUOROBENZENE	UG/L	50	48	96	86-115

ESE BATCH : G26705

Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26705 Analysis Date: 03/17/92 Analyst: DANIEL LUCAS

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		
Surrogate present?	X		
Surrogate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26729
CLASSIFICATION : ARSENIC-SW3050/SW7060

QC TYPE : FDER/SW
ANALYST : LULAMAE OSBORNE
EXTRACTOR : DEBRA ZUCKERMAN
DATA ENTRY : GFAA UPLOAD

REPORT DATE/TIME : 04/22/92 10:26:54
ANALYSIS DATE : 03/25/92
EXTRACT DATE : 03/24/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
WRITS1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITS1*1	WS-1		
WRITS1*2	WS-2		
WRITS1*3	WS-3		
WRITS1*4	WS-4		
WRITS1*5	WS-5		
WRITS1*6	WS-6		
WRITS1*7	WS-7		
WRITS1*8	WS-8		
WRITS1*9	WS-9		
WRITS1*10	WS-DUP		
WRITS1*12	WSD-1		
WRITS1*13	WSD-2		
WRITS1*14	WSD-DUP		

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/25/92	MB*QC*1	1003*GFAA	ARSENIC,SED	MG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/25/92	SP1*QC*1	1003*GFAA	ARSENIC,SED	104.1	72-120	MG/KG-DRY	1.95	2.03

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/25/92	SPM1*WRITS1*6	1003*GFAA	ARSENIC,SED	99.6	72-120	0.639	MG/KG-DRY	2.33	2.32	
03/25/92	SPM2*WRITS1*6	1003*GFAA	ARSENIC,SED	100.4	72-120	0.639	MG/KG-DRY	2.33	2.34	0.401

Spike Into Matrix Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/25/92	SPX*WRITS1*9	1003*GFAA	ARSENIC,SED	113.8	85-115	MG/KG-DRY	11.6	13.2
03/25/92	SPX*WRITS1*14	1003*GFAA	ARSENIC,SED	118.3	85-115	MG/KG-DRY	11.5	13.6

ESE BATCH : G26729

Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26729 Analysis Date: 03/25/92 Analyst: LULAMAE OSBORNE

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26733
CLASSIFICATION : SELENIUM-SW3050/SW7740

QC TYPE : FDER/SW
ANALYST : LISA SWAYZE
EXTRACTOR : DEBRA ZUCKERMAN
DATA ENTRY : GFAA UPLOAD

REPORT DATE/TIME : 04/22/92 10:27:16
ANALYSIS DATE : 03/25/92
EXTRACT DATE : 03/24/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
WRITS1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITS1*1	WS-1		
WRITS1*2	WS-2		
WRITS1*3	WS-3		
WRITS1*4	WS-4		
WRITS1*5	WS-5		
WRITS1*6	WS-6		
WRITS1*7	WS-7		
WRITS1*8	WS-8		
WRITS1*9	WS-9		
WRITS1*10	WS-DUP		
WRITS1*12	WSD-1		
WRITS1*13	WSD-2		
WRITS1*14	WSD-DUP		

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/25/92	MB*QC*1	1148*GFAA	SELENIUM,SED	MG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/25/92	SP*QC*1	1148*GFAA	SELENIUM,SED	90.8	71-129	MG/KG-DRY	1.95	1.77

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/25/92	SPM1*WRITS1*6	1148*GFAA	SELENIUM,SED	30.5	71-129	0.0	MG/KG-DRY	2.33	0.710	
03/25/92	SPM2*WRITS1*6	1148*GFAA	SELENIUM,SED	32.0	71-129	0.0	MG/KG-DRY	2.33	0.745	4.80

Spike into Matrix Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/25/92	SPX*WRITS1*1	1148*GFAA	SELENIUM,SED	54.2	85-115	MG/KG-DRY	11.6	6.29
03/25/92	SPX*WRITS1*13	1148*GFAA	SELENIUM,SED	56.2	85-115	MG/KG-DRY	11.6	6.52

ESE BATCH : G26733

Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26733 Analysis Date: 03/25/92 Analyst: LISA SWAYZE

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?		X	I148*GFAA
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?		X	I148*GFAA

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

PROB.:SAMPLE MATRIX SPIKE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:POSSIBLE MATRIX INTERFERENCE.
SPX'S WERE LOW ALSO./MFB
PROB.:SAMPLE MATRIX SPIKE DUPLICATE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:SEE ABOVE./MFB

ESE BATCH : G26765
CLASSIFICATION : ICAP METALS SCAN-SW3050/SW6010

QC TYPE : FDER/SW
ANALYST : JEFF MILLER
EXTRACTOR : DAVID NICHOLS
DATA ENTRY : ICAP UPLOAD

REPORT DATE/TIME : 04/22/92 10:27:36
ANALYSIS DATE : 03/20/92
EXTRACT DATE : 03/18/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
WRITSI	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITS1*1	WS-1	03/20/92	01:56PM
WRITS1*2	WS-2	03/20/92	02:03PM
WRITS1*3	WS-3	03/20/92	02:22PM
WRITS1*4	WS-4	03/20/92	02:30PM
WRITS1*5	WS-5	03/20/92	02:37PM
WRITS1*6	WS-6	03/20/92	02:48PM
WRITS1*7	WS-7	03/20/92	02:55PM
WRITS1*8	WS-8	03/20/92	03:02PM
WRITS1*9	WS-9	03/20/92	03:09PM
WRITS1*10	WS-DUP	03/20/92	03:19PM
WRITS1*12	WSD-1	03/20/92	03:41PM
WRITS1*13	WSD-2	03/20/92	03:58PM
WRITS1*14	WSD-DUP	03/20/92	04:06PM

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/20/92	MB*QC*1	1078*ICAP	SILVER,SED	MG/KG-DRY	ND
03/20/92	MB*QC*1	1008*ICAP	BARIUM,SED	MG/KG- DRY	2.71
03/20/92	MB*QC*1	1028*ICAP	CADMIUM,SED	MG/KG-DRY	ND
03/20/92	MB*QC*1	1029*ICAP	CHROMIUM,SED	MG/KG-DRY	ND
03/20/92	MB*QC*1	1052*ICAP	LEAD,SED	MG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/20/92	SP*QC*1	1078*ICAP	SILVER,SED	98.0	73-107	MG/KG-DRY	4.92	4.82
03/20/92	SP*QC*1	1008*ICAP	BARIUM,SED	99.0	86-106	MG/KG- DRY	197	195
03/20/92	SP*QC*1	1028*ICAP	CADMIUM,SED	90.0	80-108	MG/KG-DRY	4.92	4.43
03/20/92	SP*QC*1	1029*ICAP	CHROMIUM,SED	94.4	79-109	MG/KG-DRY	19.7	18.6
03/20/92	SP*QC*1	1052*ICAP	LEAD,SED	97.0	79-109	MG/KG-DRY	49.2	47.7

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/20/92	SPM1*WRITS1*10	1078*ICAP	SILVER,SED	100.0	73-107	0.0	MG/KG-DRY	5.31	5.31	
03/20/92	SPM1*WRITS1*10	1008*ICAP	BARIUM,SED	99.1	86-106	16.0	MG/KG- DRY	213	211	
03/20/92	SPM1*WRITS1*10	1028*ICAP	CADMIUM,SED	71.2	80-108	1.96	MG/KG-DRY	5.31	3.78	
03/20/92	SPM1*WRITS1*10	1029*ICAP	CHROMIUM,SED	55.9	79-109	16.1	MG/KG-DRY	21.3	11.9	
03/20/92	SPM1*WRITS1*10	1052*ICAP	LEAD,SED	94.9	79-109	5.13	MG/KG-DRY	53.1	50.4	
03/20/92	SPM2*WRITS1*10	1078*ICAP	SILVER,SED	98.0	73-107	0.0	MG/KG-DRY	5.52	5.41	2.02
03/20/92	SPM2*WRITS1*10	1008*ICAP	BARIUM,SED	102.3	86-106	16.0	MG/KG- DRY	221	226	2.88
03/20/92	SPM2*WRITS1*10	1028*ICAP	CADMIUM,SED	94.6	80-108	1.96	MG/KG-DRY	5.52	5.22	28.1
03/20/92	SPM2*WRITS1*10	1029*ICAP	CHROMIUM,SED	114.9	79-109	16.1	MG/KG-DRY	22.1	25.4	69.2
03/20/92	SPM2*WRITS1*10	1052*ICAP	LEAD,SED	105.4	79-109	5.13	MG/KG-DRY	55.2	58.2	10.1

ESE BATCH : G26765
Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26765 Analysis Date: 03/20/92 Analyst: JEFF MILLER

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?		X	1028*ICAP ______
			1029*ICAP ______
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?		X	1028*ICAP ______
			1029*ICAP ______

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

PROB.:SAMPLE MATRIX SPIKE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:LACK OF HOMOGENEITY OF SAMPLES./JLM
PROB.:SAMPLE MATRIX SPIKE DUPLICATE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:SEE ABOVE./JLM

ESE BATCH : G26768
CLASSIFICATION : ARSENIC-SW7060

QC TYPE : FDER/SW
ANALYST : CHRISTOPHER HORRELL
EXTRACTOR : DAVID NICHOLS
DATA ENTRY : GFAA UPLOAD

REPORT DATE/TIME : 04/22/92 10:02:34
ANALYSIS DATE : 03/19/92
EXTRACT DATE : 03/17/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTWI	3924018G 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITWI	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITWI*1	WMW-1		
WRITWI*2	WMW-2		
WRITWI*3	WMW-3		
WRITWI*4	WMW-4		
WRITWI*5	WMW-5		
WRITWI*6	WMW-6		
WRITWI*7	WMW-7		
WRITWI*8	WMW-DUP		
WRITWI*10	WSOURCE		
WRITWI*11	EQPBLK		
HUNTWI*1	HMW-1		
HUNTWI*2	HMW-2		
HUNTWI*3	HMW-3		
HUNTWI*4	HMW-4		
HUNTWI*5	HMW-5		
HUNTWI*6	HMW-6		
HUNTWI*7	HMW-7		
HUNTWI*8	HMW-8		
HUNTWI*9	HMW-9		
HUNTWI*10	HMW-DUP		
HUNTWI*12	HSOURCE		
HUNTWI*16	EQPBLK		

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/19/92	MB*QC*1	1002*GFAA	ARSENIC, TOTAL	UG/L	ND
03/19/92	MB*QC*2	1002*GFAA	ARSENIC, TOTAL	UG/L	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/19/92	SP1*QC*1	1002*GFAA	ARSENIC, TOTAL	88.5	72-120	UG/L	20.0	17.7
03/19/92	SP2*QC*1	1002*GFAA	ARSENIC, TOTAL	88.0	72-120	UG/L	20.0	17.6

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/19/92	SPM1*WRITWI*7	1002*GFAA	ARSENIC, TOTAL	90.0	72-120	3.7	UG/L	20.0	18.0	
03/19/92	SPM2*WRITWI*7	1002*GFAA	ARSENIC, TOTAL	90.0	72-120	3.7	UG/L	20.0	18.0	0.0
03/19/92	SPM1*HUNTWI*9	1002*GFAA	ARSENIC, TOTAL	79.5	72-120	5.2	UG/L	20.0	15.9	
03/19/92	SPM2*HUNTWI*9	1002*GFAA	ARSENIC, TOTAL	77.5	72-120	5.2	UG/L	20.0	15.5	2.5

Spike into Matrix Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/19/92	SPX*WRITWI*4	1002*GFAA	ARSENIC, TOTAL	124.0	85-115	UG/L	100.0	124
03/19/92	SPX*WRITWI*7	1002*GFAA	ARSENIC, TOTAL	106.0	85-115	UG/L	100.0	106
03/19/92	SPX*HUNTWI*9	1002*GFAA	ARSENIC, TOTAL	98.8	85-115	UG/L	100.0	98.8

ESE BATCH : G26768

Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26768 Analysis Date: 03/19/92 Analyst: CHRISTOPHER HORRELL

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26772
CLASSIFICATION : SELENIUM-SW7740

QC TYPE : FDER/SW
ANALYST : PAMELA YOUNG
EXTRACTOR : DAVID NICHOLS
DATA ENTRY : GFAA UPLOAD

REPORT DATE/TIME : 04/22/92 10:03:04
ANALYSIS DATE : 03/20/92
EXTRACT DATE : 03/17/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTWI	39240186 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITWI	39240186 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITWI*1	WMW-1		
WRITWI*2	WMW-2		
WRITWI*3	WMW-3		
WRITWI*4	WMW-4		
WRITWI*5	WMW-5		
WRITWI*6	WMW-6		
WRITWI*7	WMW-7		
WRITWI*8	WMW-DUP		
WRITWI*10	WSOURCE		
WRITWI*11	EQPBLK		
HUNTWI*1	HMW-1		
HUNTWI*2	HMW-2		
HUNTWI*3	HMW-3		
HUNTWI*4	HMW-4		
HUNTWI*5	HMW-5		
HUNTWI*6	HMW-6		
HUNTWI*7	HMW-7		
HUNTWI*8	HMW-8		
HUNTWI*9	HMW-9		
HUNTWI*10	HMW-DUP		
HUNTWI*12	HSOURCE		
HUNTWI*16	EQPBLK		

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/20/92	MB*QC*1	1147*GFAA	SELENIUM,TOTAL	UG/L	ND
03/20/92	MB*QC*2	1147*GFAA	SELENIUM,TOTAL	UG/L	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/20/92	SP*QC*1	1147*GFAA	SELENIUM,TOTAL	104.0	71-129	UG/L	20.0	20.8
03/20/92	SP*QC*2	1147*GFAA	SELENIUM,TOTAL	104.0	71-129	UG/L	20.0	20.8

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/20/92	SPM1*WRITWI*7	1147*GFAA	SELENIUM,TOTAL	54.0	71-129	0.0	UG/L	20.0	10.8	
03/20/92	SPM2*WRITWI*7	1147*GFAA	SELENIUM,TOTAL	45.0	71-129	0.0	UG/L	20.0	9.0	18.2
03/20/92	SPM1*HUNTWI*9	1147*GFAA	SELENIUM,TOTAL	82.5	71-129	0.0	UG/L	20.0	16.5	
03/20/92	SPM2*HUNTWI*9	1147*GFAA	SELENIUM,TOTAL	77.5	71-129	0.0	UG/L	20.0	15.5	6.3

Spike into Matrix Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/20/92	SPX*WRITWI*5	1147*GFAA	SELENIUM,TOTAL	96.5	85-115	UG/L	100.0	96.5
03/20/92	SPX*WRITWI*7	1147*GFAA	SELENIUM,TOTAL	72.4	85-115	UG/L	100.0	72.4
03/20/92	SPX*HUNTWI*9	1147*GFAA	SELENIUM,TOTAL	94.4	85-115	UG/L	100.0	94.4

ESE BATCH : G26772

Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26772 Analysis Date: 03/20/92 Analyst: PAMELA YOUNG

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?		X	1147*GFAA
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?		X	1147*GFAA

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

PROB.:SAMPLE MATRIX SPIKE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:POSSIBLE MATRIX INTERFERENCE./MFB
PROB.:SAMPLE MATRIX SPIKE DUPLICATE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:SEE ABOVE./MFB

ESE BATCH : G26775
CLASSIFICATION : SEMIVOLATILE ORGANIC CMPDS-E625

QC TYPE	: FDER/SW	REPORT DATE/TIME	: 04/22/92 10:08:34
ANALYST	: SCOTT KEERAN	ANALYSIS DATE	: 03/19/92
EXTRACTOR	:	EXTRACT DATE	: 03/18/92
DATA ENTRY	: TODD ROMERO		

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : BY CONCENTRATION

BATCH NOTES
DOWNLOAD FILE WRIWSK

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTWI	39240186 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITWI	39240186 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITWI*1	WMW-1	03/19/92	10:50AM
WRITWI*2	WMW-2	03/19/92	11:42AM
WRITW1*3	WMW-3	03/19/92	12:34PM
WRITW1*4	WMW-4	03/19/92	01:25PM
WRITW1*5	WMW-5	03/19/92	02:17PM
WRITWI*6	WMW-6	03/19/92	03:09PM
WRITWI*7	WMW-7	03/19/92	04:02PM
WRITWI*8	WMW-DUP	03/19/92	04:54PM
WRITW1*10	WSOURCE	03/19/92	05:46PM
WRITWI*11	EQPBLK	03/19/92	06:38PM
HUNTWI*1	HMW-1	03/19/92	07:30PM
HUNTWI*2	HMW-2	03/19/92	09:42PM
HUNTW1*3	HMW-3	03/19/92	10:34PM
HUNTW1*4	HMW-4	03/19/92	11:27PM
HUNTWI*5	HMW-5	03/20/92	12:19AM
HUNTWI*6	HMW-6	03/20/92	01:11AM

ESE BATCH : G26775

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/19/92	MB*QC*1	34696*GMS	NAPHTHALENE	UG/L	ND
03/19/92	MB*QC*1	34200*GMS	ACENAPHTHYLENE	UG/L	ND
03/19/92	MB*QC*1	34205*GMS	ACENAPHTHENE	UG/L	ND
03/19/92	MB*QC*1	34381*GMS	FLUORENE	UG/L	ND
03/19/92	MB*QC*1	34461*GMS	PHENANTHRENE	UG/L	ND
03/19/92	MB*QC*1	34220*GMS	ANTHRACENE	UG/L	ND
03/19/92	MB*QC*1	34376*GMS	FLUORANTHENE	UG/L	ND
03/19/92	MB*QC*1	34469*GMS	PYRENE	UG/L	ND
03/19/92	MB*QC*1	34526*GMS	BENZO(A)ANTHRACENE	UG/L	ND
03/19/92	MB*QC*1	34320*GMS	CHRYSENE	UG/L	ND
03/19/92	MB*QC*1	34230*GMS	BENZO(B)FLUORANTHENE	UG/L	ND
03/19/92	MB*QC*1	34242*GMS	BENZO(K)FLUORANTHENE	UG/L	ND
03/19/92	MB*QC*1	34247*GMS	BENZO(A)PYRENE	UG/L	ND
03/19/92	MB*QC*1	34403*GMS	INDENO(1,2,3-CD) PYRENE	UG/L	ND
03/19/92	MB*QC*1	34556*GMS	DIBEN'(A,H)ANTH'CENE	UG/L	ND
03/19/92	MB*QC*1	34521*GMS	BENZO(GHI)PERYLENE	UG/L	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/19/92	SPI*QC*1	34205*GMS	ACENAPHTHENE	78	46-118	UG/L	50	39
03/19/92	SPI*QC*1	34469*GMS	PYRENE	104	26-127	UG/L	50	52

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/19/92	SPM1*WRITW1*1	34205*GMS	ACENAPHTHENE	79	46-118	0.0	UG/L	56	44	
03/19/92	SPM1*WRITW1*1	34469*GMS	PYRENE	107	26-127	0.0	UG/L	56	60	
03/19/92	SPM2*WRITW1*1	34205*GMS	ACENAPHTHENE	75	46-118	0.0	UG/L	56	42	3.9
03/19/92	SPM2*WRITW1*1	34469*GMS	PYRENE	86	26-127	0.0	UG/L	56	48	24

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/19/92	MB*QC*1	98316*SUR	2-FLUOROPHENOL	UG/L	100	66	66	21-100
03/19/92	MB*QC*1	98317*SUR	PHENOL-D(5)	UG/L	100	40	40	10-94
03/19/92	MB*QC*1	98318*SUR	NITROBENZENE-D(5)	UG/L	50	39	78	35-114
03/19/92	MB*QC*1	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	35	70	43-116
03/19/92	MB*QC*1	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	88	88	10-123
03/19/92	MB*QC*1	97447*SUR	TERPHENYL-D(14)	UG/L	50	40	80	33-141
03/19/92	DA*WRITW1*1	98316*SUR	2-FLUOROPHENOL	UG/L	100	75	75	21-100
03/19/92	DA*WRITW1*1	98317*SUR	PHENOL-D(5)	UG/L	100	47	47	10-94
03/19/92	DA*WRITW1*1	98318*SUR	NITROBENZENE-D(5)	UG/L	50	40	80	35-114
03/19/92	DA*WRITW1*1	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	41	82	43-116
03/19/92	DA*WRITW1*1	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	100	100	10-123
03/19/92	DA*WRITW1*1	97447*SUR	TERPHENYL-D(14)	UG/L	50	41	82	33-141
03/19/92	DA*WRITW1*2	98316*SUR	2-FLUOROPHENOL	UG/L	100	76	76	21-100
03/19/92	DA*WRITW1*2	98317*SUR	PHENOL-D(5)	UG/L	100	50	50	10-94
03/19/92	DA*WRITW1*2	98318*SUR	NITROBENZENE-D(5)	UG/L	50	36	72	35-114
03/19/92	DA*WRITW1*2	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	38	76	43-116
03/19/92	DA*WRITW1*2	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	97	97	10-123
03/19/92	DA*WRITW1*2	97447*SUR	TERPHENYL-D(14)	UG/L	50	42	84	33-141
03/19/92	DA*WRITW1*3	98316*SUR	2-FLUOROPHENOL	UG/L	100	80	80	21-100
03/19/92	DA*WRITW1*3	98317*SUR	PHENOL-D(5)	UG/L	100	51	51	10-94
03/19/92	DA*WRITW1*3	98318*SUR	NITROBENZENE-D(5)	UG/L	50	39	78	35-114
03/19/92	DA*WRITW1*3	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	39	78	43-116
03/19/92	DA*WRITW1*3	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	100	100	10-123
03/19/92	DA*WRITW1*3	97447*SUR	TERPHENYL-D(14)	UG/L	50	36	72	33-141
03/19/92	DA*WRITW1*4	98316*SUR	2-FLUOROPHENOL	UG/L	100	81	81	21-100
03/19/92	DA*WRITW1*4	98317*SUR	PHENOL-D(5)	UG/L	100	52	52	10-94
03/19/92	DA*WRITW1*4	98318*SUR	NITROBENZENE-D(5)	UG/L	50	40	80	35-114
03/19/92	DA*WRITW1*4	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	40	80	43-116
03/19/92	DA*WRITW1*4	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	110	110	10-123
03/19/92	DA*WRITW1*4	97447*SUR	TERPHENYL-D(14)	UG/L	50	38	76	33-141
03/19/92	DA*WRITW1*5	98316*SUR	2-FLUOROPHENOL	UG/L	100	83	83	21-100
03/19/92	DA*WRITW1*5	98317*SUR	PHENOL-D(5)	UG/L	100	54	54	10-94
03/19/92	DA*WRITW1*5	98318*SUR	NITROBENZENE-D(5)	UG/L	50	40	80	35-114
03/19/92	DA*WRITW1*5	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	39	78	43-116
03/19/92	DA*WRITW1*5	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	92	92	10-123
03/19/92	DA*WRITW1*5	97447*SUR	TERPHENYL-D(14)	UG/L	50	41	82	33-141
03/19/92	DA*WRITW1*6	98316*SUR	2-FLUOROPHENOL	UG/L	100	77	77	21-100
03/19/92	DA*WRITW1*6	98317*SUR	PHENOL-D(5)	UG/L	100	50	50	10-94
03/19/92	DA*WRITW1*6	98318*SUR	NITROBENZENE-D(5)	UG/L	50	38	76	35-114
03/19/92	DA*WRITW1*6	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	38	76	43-116
03/19/92	DA*WRITW1*6	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	100	100	10-123
03/19/92	DA*WRITW1*6	97447*SUR	TERPHENYL-D(14)	UG/L	50	44	88	33-141
03/19/92	DA*WRITW1*7	98316*SUR	2-FLUOROPHENOL	UG/L	100	75	75	21-100

ESE BATCH : G26775

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/19/92	DA*WRITW1*7	98317*SUR	PHENOL-D(5)	UG/L	100	48	48	10-94
03/19/92	DA*WRITW1*7	98318*SUR	NITROBENZENE-D(5)	UG/L	50	40	80	35-114
03/19/92	DA*WRITW1*7	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	42	84	43-116
03/19/92	DA*WRITW1*7	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	98	98	10-123
03/19/92	DA*WRITW1*7	97447*SUR	TERPHENYL-D(14)	UG/L	50	45	90	33-141
03/19/92	DA*WRITW1*8	98316*SUR	2-FLUOROPHENOL	UG/L	100	73	73	21-100
03/19/92	DA*WRITW1*8	98317*SUR	PHENOL-D(5)	UG/L	100	47	47	10-94
03/19/92	DA*WRITW1*8	98318*SUR	NITROBENZENE-D(5)	UG/L	50	35	70	35-114
03/19/92	DA*WRITW1*8	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	35	70	43-116
03/19/92	DA*WRITW1*8	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	98	98	10-123
03/19/92	DA*WRITW1*8	97447*SUR	TERPHENYL-D(14)	UG/L	50	37	74	33-141
03/19/92	DA*WRITW1*10	98316*SUR	2-FLUOROPHENOL	UG/L	100	81	81	21-100
03/19/92	DA*WRITW1*10	98317*SUR	PHENOL-D(5)	UG/L	100	52	52	10-94
03/19/92	DA*WRITW1*10	98318*SUR	NITROBENZENE-D(5)	UG/L	50	34	68	35-114
03/19/92	DA*WRITW1*10	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	35	70	43-116
03/19/92	DA*WRITW1*10	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	98	98	10-123
03/19/92	DA*WRITW1*10	97447*SUR	TERPHENYL-D(14)	UG/L	50	38	76	33-141
03/19/92	DA*WRITW1*11	98316*SUR	2-FLUOROPHENOL	UG/L	100	77	77	21-100
03/19/92	DA*WRITW1*11	98317*SUR	PHENOL-D(5)	UG/L	100	49	49	10-94
03/19/92	DA*WRITW1*11	98318*SUR	NITROBENZENE-D(5)	UG/L	50	37	74	35-114
03/19/92	DA*WRITW1*11	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	37	74	43-116
03/19/92	DA*WRITW1*11	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	100	100	10-123
03/19/92	DA*WRITW1*11	97447*SUR	TERPHENYL-D(14)	UG/L	50	46	92	33-141
03/19/92	DA*HUNTW1*1	98316*SUR	2-FLUOROPHENOL	UG/L	100	75	75	21-100
03/19/92	DA*HUNTW1*1	98317*SUR	PHENOL-D(5)	UG/L	100	48	48	10-94
03/19/92	DA*HUNTW1*1	98318*SUR	NITROBENZENE-D(5)	UG/L	50	36	72	35-114
03/19/92	DA*HUNTW1*1	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	36	72	43-116
03/19/92	DA*HUNTW1*1	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	110	110	10-123
03/19/92	DA*HUNTW1*1	97447*SUR	TERPHENYL-D(14)	UG/L	50	44	88	33-141
03/19/92	DA*HUNTW1*2	98316*SUR	2-FLUOROPHENOL	UG/L	100	69	69	21-100
03/19/92	DA*HUNTW1*2	98317*SUR	PHENOL-D(5)	UG/L	100	46	46	10-94
03/19/92	DA*HUNTW1*2	98318*SUR	NITROBENZENE-D(5)	UG/L	50	37	74	35-114
03/19/92	DA*HUNTW1*2	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	36	72	43-116
03/19/92	DA*HUNTW1*2	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	88	88	10-123
03/19/92	DA*HUNTW1*2	97447*SUR	TERPHENYL-D(14)	UG/L	50	30	60	33-141
03/19/92	DA*HUNTW1*3	98316*SUR	2-FLUOROPHENOL	UG/L	100	77	77	21-100
03/19/92	DA*HUNTW1*3	98317*SUR	PHENOL-D(5)	UG/L	100	49	49	10-94
03/19/92	DA*HUNTW1*3	98318*SUR	NITROBENZENE-D(5)	UG/L	50	39	78	35-114
03/19/92	DA*HUNTW1*3	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	38	76	43-116
03/19/92	DA*HUNTW1*3	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	94	94	10-123
03/19/92	DA*HUNTW1*3	97447*SUR	TERPHENYL-D(14)	UG/L	50	47	94	33-141
03/19/92	DA*HUNTW1*4	98316*SUR	2-FLUOROPHENOL	UG/L	100	62	62	21-100
03/19/92	DA*HUNTW1*4	98317*SUR	PHENOL-D(5)	UG/L	100	41	41	10-94
03/19/92	DA*HUNTW1*4	98318*SUR	NITROBENZENE-D(5)	UG/L	50	31	62	35-114
03/19/92	DA*HUNTW1*4	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	33	66	43-116
03/19/92	DA*HUNTW1*4	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	93	93	10-123
03/19/92	DA*HUNTW1*4	97447*SUR	TERPHENYL-D(14)	UG/L	50	53	110	33-141
03/20/92	DA*HUNTW1*5	98316*SUR	2-FLUOROPHENOL	UG/L	100	79	79	21-100
03/20/92	DA*HUNTW1*5	98317*SUR	PHENOL-D(5)	UG/L	100	49	49	10-94
03/20/92	DA*HUNTW1*5	98318*SUR	NITROBENZENE-D(5)	UG/L	50	37	74	35-114
03/20/92	DA*HUNTW1*5	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	36	72	43-116
03/20/92	DA*HUNTW1*5	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	97	97	10-123
03/20/92	DA*HUNTW1*5	97447*SUR	TERPHENYL-D(14)	UG/L	50	46	92	33-141
03/20/92	DA*HUNTW1*6	98316*SUR	2-FLUOROPHENOL	UG/L	100	79	79	21-100
03/20/92	DA*HUNTW1*6	98317*SUR	PHENOL-D(5)	UG/L	100	60	60	10-94
03/20/92	DA*HUNTW1*6	98318*SUR	NITROBENZENE-D(5)	UG/L	50	33	66	35-114
03/20/92	DA*HUNTW1*6	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	51	100	43-116
03/20/92	DA*HUNTW1*6	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	100	100	10-123
03/20/92	DA*HUNTW1*6	97447*SUR	TERPHENYL-D(14)	UG/L	50	48	96	33-141
03/20/92	SPM1*WRITW1*1	98316*SUR	2-FLUOROPHENOL	UG/L	110	86	78	21-100
03/20/92	SPM1*WRITW1*1	98317*SUR	PHENOL-D(5)	UG/L	110	63	57	10-94
03/20/92	SPM1*WRITW1*1	98318*SUR	NITROBENZENE-D(5)	UG/L	56	45	80	35-114
03/20/92	SPM1*WRITW1*1	98321*SUR	2-FLUOROBIPHENYL	UG/L	56	43	77	43-116
03/20/92	SPM1*WRITW1*1	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	110	120	110	10-123
03/20/92	SPM1*WRITW1*1	97447*SUR	TERPHENYL-D(14)	UG/L	56	54	96	33-141
03/20/92	SPM2*WRITW1*1	98316*SUR	2-FLUOROPHENOL	UG/L	110	88	80	21-100
03/20/92	SPM2*WRITW1*1	98317*SUR	PHENOL-D(5)	UG/L	110	65	59	10-94
03/20/92	SPM2*WRITW1*1	98318*SUR	NITROBENZENE-D(5)	UG/L	56	42	75	35-114
03/20/92	SPM2*WRITW1*1	98321*SUR	2-FLUOROBIPHENYL	UG/L	56	39	70	43-116
03/20/92	SPM2*WRITW1*1	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	110	110	100	10-123
03/20/92	SPM2*WRITW1*1	97447*SUR	TERPHENYL-D(14)	UG/L	56	43	77	33-141
03/20/92	SP1*QC*1	98316*SUR	2-FLUOROPHENOL	UG/L	100	72	72	21-100
03/20/92	SP1*QC*1	98317*SUR	PHENOL-D(5)	UG/L	100	52	52	10-94
03/20/92	SP1*QC*1	98318*SUR	NITROBENZENE-D(5)	UG/L	50	37	74	35-114
03/20/92	SP1*QC*1	98321*SUR	2-FLUOROBIPHENYL	UG/L	50	36	72	43-116
03/20/92	SP1*QC*1	97446*SUR	2,4,6-TRIBROMOPHENOL	UG/L	100	98	98	10-123
03/20/92	SP1*QC*1	97447*SUR	TERPHENYL-D(14)	UG/L	50	43	86	33-141

ESE BATCH : G26775

Environmental Science and Engineering Analytical Services
Computer QC Checks

Batch No.: G26775 Analysis Date: 03/19/92 Analyst: SCOTT KEERAN

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		
Surrogate present?	X		
Surrogate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26777
CLASSIFICATION : SEMIVOLATILE ORGANIC CMPDS-SW3540/SW8270

QC TYPE : FDER/SW
ANALYST : D. M. RITTER
EXTRACTOR :
DATA ENTRY : FINNIGAN UPLOAD

REPORT DATE/TIME : 04/22/92 10:35:17
ANALYSIS DATE : 03/19/92
EXTRACT DATE : 03/12/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

BATCH NOTES
DOWNLOAD FILE WRITS1.MSQ

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
WRITS1	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITS1*1	WS-1	03/19/92	11:03AM
WRITS1*2	WS-2	03/20/92	03:41AM
WRITS1*3	WS-3	03/20/92	04:43AM
WRITS1*4	WS-4	03/20/92	05:47AM
WRITS1*5	WS-5	03/20/92	02:29PM
WRITS1*6	WS-6	03/20/92	03:30PM
WRITS1*7	WS-7	03/19/92	08:20PM
WRITS1*8	WS-8	03/19/92	09:22PM
WRITS1*9	WS-9	03/19/92	10:24PM
WRITS1*10	WS-DUP	03/19/92	11:28PM
WRITS1*13	WSD-2	03/20/92	12:32AM
WRITS1*14	WSD-DUP	03/20/92	01:34AM
WRITS1*12	WSD-1	03/20/92	04:30PM

ESE BATCH : G26777

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/19/92	MB*0312*1	34569*GMS	1,3-DICHLOROBENZENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34574*GMS	1,4-DICHLOROBENZENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34539*GMS	1,2-DICHLOROBENZENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34445*GMS	NAPHTHALENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34203*GMS	ACENAPHTHYLENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34208*GMS	ACENAPHTHENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34384*GMS	FLUORENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34464*GMS	PHENANTHRENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34223*GMS	ANTHRACENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34379*GMS	FLUORANTHENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34472*GMS	PYRENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34529*GMS	BENZO(A)ANTHRACENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34323*GMS	CHRYSENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34233*GMS	BENZO(B)FLUORANTHENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34245*GMS	BENZO(K)FLUORANTHENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34250*GMS	BENZO(A)PYRENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34406*GMS	INDENO(1,2,3-CD) PYRENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34559*GMS	DIBEN(A,H)ANTHRACENE	UG/KG-DRY	ND
03/19/92	MB*0312*1	34524*GMS	BENZO(GHI)PERYLENE	UG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/19/92	SP1*0312*1	34569*GMS	1,3-DICHLOROBENZENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34574*GMS	1,4-DICHLOROBENZENE	82	28-104	UG/KG-DRY	3300	2700
03/19/92	SP1*0312*1	34539*GMS	1,2-DICHLOROBENZENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34445*GMS	NAPHTHALENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34203*GMS	ACENAPHTHYLENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34208*GMS	ACENAPHTHENE	82	31-137	UG/KG-DRY	3300	2700
03/19/92	SP1*0312*1	34384*GMS	FLUORENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34464*GMS	PHENANTHRENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34223*GMS	ANTHRACENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34379*GMS	FLUORANTHENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34472*GMS	PYRENE	94	35-142	UG/KG-DRY	3300	3100
03/19/92	SP1*0312*1	34529*GMS	BENZO(A)ANTHRACENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34323*GMS	CHRYSENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34233*GMS	BENZO(B)FLUORANTHENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34245*GMS	BENZO(K)FLUORANTHENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34250*GMS	BENZO(A)PYRENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34406*GMS	INDENO(1,2,3-CD) PYRENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34559*GMS	DIBEN(A,H)ANTHRACENE	0.0	80-120	UG/KG-DRY	3300	ND
03/19/92	SP1*0312*1	34524*GMS	BENZO(GHI)PERYLENE	0.0	80-120	UG/KG-DRY	3300	ND

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/19/92	SPM1*WRITS1*4	34569*GMS	1,3-DICHLOROBENZENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34574*GMS	1,4-DICHLOROBENZENE	81	28-104	0.0	UG/KG-DRY	3700	3000	
03/19/92	SPM1*WRITS1*4	34539*GMS	1,2-DICHLOROBENZENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34445*GMS	NAPHTHALENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34203*GMS	ACENAPHTHYLENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34208*GMS	ACENAPHTHENE	78	31-137	0.0	UG/KG-DRY	3700	2900	
03/19/92	SPM1*WRITS1*4	34384*GMS	FLUORENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34464*GMS	PHENANTHRENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34223*GMS	ANTHRACENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34379*GMS	FLUORANTHENE	0.68	80-120	0.0	UG/KG-DRY	3700	25	
03/19/92	SPM1*WRITS1*4	34472*GMS	PYRENE	89	35-142	0.0	UG/KG-DRY	3700	3300	
03/19/92	SPM1*WRITS1*4	34529*GMS	BENZO(A)ANTHRACENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34323*GMS	CHRYSENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34233*GMS	BENZO(B)FLUORANTHENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34245*GMS	BENZO(K)FLUORANTHENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34250*GMS	BENZO(A)PYRENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34406*GMS	INDENO(1,2,3-CD) PYRENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34559*GMS	DIBEN(A,H)ANTHRACENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM1*WRITS1*4	34524*GMS	BENZO(GHI)PERYLENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34569*GMS	1,3-DICHLOROBENZENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34574*GMS	1,4-DICHLOROBENZENE	78	28-104	0.0	UG/KG-DRY	3700	2900	2.5
03/19/92	SPM2*WRITS1*4	34539*GMS	1,2-DICHLOROBENZENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34445*GMS	NAPHTHALENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34203*GMS	ACENAPHTHYLENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34208*GMS	ACENAPHTHENE	78	31-137	0.0	UG/KG-DRY	3700	2900	1.3
03/19/92	SPM2*WRITS1*4	34384*GMS	FLUORENE	9.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34464*GMS	PHENANTHRENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34223*GMS	ANTHRACENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34379*GMS	FLUORANTHENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	200
03/19/92	SPM2*WRITS1*4	34472*GMS	PYRENE	86	35-142	0.0	UG/KG-DRY	3700	3200	2.3
03/19/92	SPM2*WRITS1*4	34529*GMS	BENZO(A)ANTHRACENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	

ESE BATCH : G26777

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/19/92	SPM2*WRITS1*4	34323*GMS	CHRYSENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34233*GMS	BENZO(B)FLUORANTHENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34245*GMS	BENZO(K)FLUORANTHENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34250*GMS	BENZO(A)PYRENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34406*GMS	INDENO(1,2,3-CD) PYRENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34559*GMS	DIBEN(A,H)ANTHRACENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	
03/19/92	SPM2*WRITS1*4	34524*GMS	BENZO(GHI)PERYLENE	0.0	80-120	0.0	UG/KG-DRY	3700	ND	

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/19/92	MB*0312*1	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5600	84	25-121
03/19/92	MB*0312*1	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5410	81.1	24-113
03/19/92	MB*0312*1	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/19/92	MB*0312*1	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2800	85	30-115
03/19/92	MB*0312*1	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	6360	95.4	19-122
03/19/92	MB*0312*1	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3050	91.6	18-137
03/19/92	SP1*0312*1	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5900	88	25-121
03/19/92	SP1*0312*1	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5510	82.6	24-113
03/19/92	SP1*0312*1	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2800	85	23-120
03/19/92	SP1*0312*1	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2900	88	30-115
03/19/92	SP1*0312*1	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	6420	96.3	19-122
03/19/92	SP1*0312*1	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2960	88.9	18-137
03/19/92	DA*WRITS1*1	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5900	88	25-121
03/19/92	DA*WRITS1*1	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5450	81.7	24-113
03/19/92	DA*WRITS1*1	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/19/92	DA*WRITS1*1	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2900	88	30-115
03/19/92	DA*WRITS1*1	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	5840	87.6	19-122
03/19/92	DA*WRITS1*1	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2530	76.0	18-137
03/20/92	DA*WRITS1*2	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5700	85	25-121
03/20/92	DA*WRITS1*2	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5180	77.7	24-113
03/20/92	DA*WRITS1*2	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2800	85	23-120
03/20/92	DA*WRITS1*2	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2800	85	30-115
03/20/92	DA*WRITS1*2	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	4690	70.3	19-122
03/20/92	DA*WRITS1*2	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3240	97.3	18-137
03/20/92	DA*WRITS1*3	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5500	82	25-121
03/20/92	DA*WRITS1*3	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5070	76.0	24-113
03/20/92	DA*WRITS1*3	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2700	82	23-120
03/20/92	DA*WRITS1*3	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2700	82	30-115
03/20/92	DA*WRITS1*3	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	4790	71.8	19-122
03/20/92	DA*WRITS1*3	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3070	92.2	18-137
03/20/92	DA*WRITS1*4	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5400	81	25-121
03/20/92	DA*WRITS1*4	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	4990	74.8	24-113
03/20/92	DA*WRITS1*4	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/20/92	DA*WRITS1*4	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2600	79	30-115
03/20/92	DA*WRITS1*4	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	5630	84.4	19-122
03/20/92	DA*WRITS1*4	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3600	108	18-137
03/19/92	SPM1*WRITS1*4	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5700	85	25-121
03/19/92	SPM1*WRITS1*4	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5200	78.0	24-113
03/19/92	SPM1*WRITS1*4	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2500	76	23-120
03/19/92	SPM1*WRITS1*4	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2900	88	30-115
03/19/92	SPM1*WRITS1*4	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	6910	104	19-122
03/19/92	SPM1*WRITS1*4	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3010	90.4	18-137
03/19/92	SPM2*WRITS1*4	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5500	82	25-121
03/19/92	SPM2*WRITS1*4	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5100	76.5	24-113
03/19/92	SPM2*WRITS1*4	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/19/92	SPM2*WRITS1*4	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	3100	94	30-115
03/19/92	SPM2*WRITS1*4	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	6380	95.7	19-122
03/19/92	SPM2*WRITS1*4	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2770	83.2	18-137
03/20/92	DA*WRITS1*5	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5100	76	25-121
03/20/92	DA*WRITS1*5	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5160	77.4	24-113
03/20/92	DA*WRITS1*5	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/20/92	DA*WRITS1*5	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2800	85	30-115
03/20/92	DA*WRITS1*5	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	5410	81.1	19-122
03/20/92	DA*WRITS1*5	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2620	78.7	18-137
03/20/92	DA*WRITS1*6	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5600	84	25-121
03/20/92	DA*WRITS1*6	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5090	76.3	24-113
03/20/92	DA*WRITS1*6	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/20/92	DA*WRITS1*6	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2900	88	30-115
03/20/92	DA*WRITS1*6	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	5650	84.7	19-122
03/20/92	DA*WRITS1*6	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2320	69.7	18-137
03/19/92	DA*WRITS1*7	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5800	87	25-121
03/19/92	DA*WRITS1*7	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5400	81.0	24-113
03/19/92	DA*WRITS1*7	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2800	85	23-120
03/19/92	DA*WRITS1*7	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2800	85	30-115
03/19/92	DA*WRITS1*7	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	5540	83.1	19-122
03/19/92	DA*WRITS1*7	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2850	85.6	18-137

ESE BATCH : G26777

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/19/92	DA*WRITS1*8	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5600	84	25-121
03/19/92	DA*WRITS1*8	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5250	78.7	24-113
03/19/92	DA*WRITS1*8	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2700	82	23-120
03/19/92	DA*WRITS1*8	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2500	76	30-115
03/19/92	DA*WRITS1*8	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	4460	66.9	19-122
03/19/92	DA*WRITS1*8	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2760	82.9	18-137
03/19/92	DA*WRITS1*9	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5700	85	25-121
03/19/92	DA*WRITS1*9	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5260	78.9	24-113
03/19/92	DA*WRITS1*9	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/19/92	DA*WRITS1*9	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2600	79	30-115
03/19/92	DA*WRITS1*9	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	3890	58.3	19-122
03/19/92	DA*WRITS1*9	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3430	103	18-137
03/19/92	DA*WRITS1*10	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5200	78	25-121
03/19/92	DA*WRITS1*10	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5020	75.3	24-113
03/19/92	DA*WRITS1*10	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2700	82	23-120
03/19/92	DA*WRITS1*10	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2700	82	30-115
03/19/92	DA*WRITS1*10	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	4430	66.4	19-122
03/19/92	DA*WRITS1*10	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2690	80.8	18-137
03/20/92	DA*WRITS1*13	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5400	81	25-121
03/20/92	DA*WRITS1*13	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5350	80.2	24-113
03/20/92	DA*WRITS1*13	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2800	85	23-120
03/20/92	DA*WRITS1*13	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2600	79	30-115
03/20/92	DA*WRITS1*13	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	4790	71.8	19-122
03/20/92	DA*WRITS1*13	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	3270	98.2	18-137
03/20/92	DA*WRITS1*14	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5300	79	25-121
03/20/92	DA*WRITS1*14	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	5050	75.7	24-113
03/20/92	DA*WRITS1*14	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2600	79	23-120
03/20/92	DA*WRITS1*14	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2500	76	30-115
03/20/92	DA*WRITS1*14	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	4350	65.2	19-122
03/20/92	DA*WRITS1*14	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2780	83.5	18-137
03/20/92	DA*WRITS1*12	98325*SUR	2-FLUOROPHENOL	UG/KG-DRY	6700	5100	76	25-121
03/20/92	DA*WRITS1*12	98326*SUR	PHENOL-D(5)	UG/KG-DRY	6670	4940	74.1	24-113
03/20/92	DA*WRITS1*12	98327*SUR	NITROBENZENE-D(5)	UG/KG-DRY	3300	2300	70	23-120
03/20/92	DA*WRITS1*12	98330*SUR	2-FLUOROBIPHENYL	UG/KG-DRY	3300	2700	82	30-115
03/20/92	DA*WRITS1*12	97448*SUR	2,4,6-TRIBROMOPHENOL	UG/KG	6670	5010	75.1	19-122
03/20/92	DA*WRITS1*12	97449*SUR	TERPHENYL-D(14)	UG/KG	3330	2240	67.3	18-137

ESE BATCH : G26777

Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26777 Analysis Date: 03/19/92 Analyst: D. M. RITTER

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		
Surrogate present?	X		
Surrogate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26802
CLASSIFICATION : MERCURY-SW7470

QC TYPE : FDER/SW
ANALYST : LISA SWAYZE
EXTRACTOR : LISA SWAYZE
DATA ENTRY : LISA SWAYZE

REPORT DATE/TIME : 04/22/92 10:03:34
ANALYSIS DATE : 03/24/92
EXTRACT DATE : 03/23/92

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
HUNTWI	3924018G 0201	COE - ST. STEWART	SUZANNE WOODWARD
WRITWI	3924018G 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITWI*1	WMW-1		
WRITWI*2	WMW-2		
WRITWI*3	WMW-3		
WRITWI*4	WMW-4		
WRITWI*5	WMW-5		
WRITWI*6	WMW-6		
WRITWI*7	WMW-7		
WRITWI*8	WMW-DUP		
WRITWI*10	WSOURCE		
WRITWI*11	EQPBLK		
HUNTWI*1	HMW-1		
HUNTWI*2	HMW-2		
HUNTWI*3	HMW-3		
HUNTWI*4	HMW-4		
HUNTWI*5	HMW-5		
HUNTWI*6	HMW-6		
HUNTWI*7	HMW-7		
HUNTWI*8	HMW-8		
HUNTWI*9	HMW-9		
HUNTWI*10	HMW-DUP		
HUNTWI*12	HSOURCE		
HUNTWI*16	EQPBLK		

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/24/92	MB*QC*1	71900*CVAA	MERCURY,TOTAL	UG/L	ND
03/24/92	MB*QC*2	71900*CVAA	MERCURY,TOTAL	UG/L	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/24/92	SP*QC*1	71900*CVAA	MERCURY,TOTAL	104.4	83-125	UG/L	5.00	5.22
03/24/92	SP*QC*2	71900*CVAA	MERCURY,TOTAL	106.0	83-125	UG/L	5.00	5.30

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/24/92	SPM1*WRITWI*6	71900*CVAA	MERCURY,TOTAL	92.6	83-125	0.0	UG/L	5.00	4.63	
03/24/92	SPM2*WRITWI*6	71900*CVAA	MERCURY,TOTAL	94.2	83-125	0.0	UG/L	5.00	4.71	1.71
03/24/92	SPM1*HUNTWI*2	71900*CVAA	MERCURY,TOTAL	100.4	83-125	0.0	UG/L	5.00	5.02	
03/24/92	SPM2*HUNTWI*2	71900*CVAA	MERCURY,TOTAL	100.4	83-125	0.0	UG/L	5.00	5.02	0.0

ESE BATCH - : G26802

Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26802 Analysis Date: 03/24/92 Analyst: LISA SWAYZE

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
No. of calibration standards present acceptable?	X		
Curve correlation coefficient >= 0.995?	X		
Calibration curve y-intercept < curve detection limit?	X		
Sample responses within highest standard response?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?	X		
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

ESE BATCH : G26918
CLASSIFICATION : NON-HALOGENATED VOLATILE-SW 8240

QC TYPE : FDER/SW
ANALYST : LARRY SHROADS
EXTRACTOR :
DATA ENTRY : TODD ROMERO

REPORT DATE/TIME : 04/22/92 10:40:32
ANALYSIS DATE : 03/15/92
EXTRACT DATE :

STATUS : FINAL

METHOD BLANK CORRECTION METHOD : NONE

BATCH NOTES

FIELD GRP	PROJECT NUMBER	PROJECT NAME	LAB COORDINATOR
WRITSI	39240186 0201	COE - FT. STEWART	SUZANNE WOODWARD

SAMPLE CODE	CLIENT ID	DATE ANALYZED	TIME ANALYZED
WRITSI*13	WSD-2	03/16/92	12:24AM
WRITSI*1	WS-1	03/16/92	02:44AM
WRITSI*4	WS-4	03/16/92	05:03AM
WRITSI*5	WS-5	03/16/92	05:48AM
WRITSI*6	WS-6	03/16/92	06:34AM
WRITSI*7	WS-7	03/16/92	07:20AM
WRITSI*8	WS-8	03/16/92	08:06AM
WRITSI*2	WS-2	03/16/92	06:31PM
WRITSI*3	WS-3	03/16/92	07:17PM
WRITSI*9	WS-9	03/16/92	08:03PM
WRITSI*10	WS-DUP	03/16/92	08:49PM
WRITSI*12	WSD-1	03/16/92	09:35PM
WRITSI*14	WSD-DUP	03/16/92	10:21PM

Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/15/92	MB*QC*0315	34421*GMS	CHLOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34416*GMS	BROMOMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34495*GMS	VINYL CHLORIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34314*GMS	CHLOROETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34426*GMS	METHYLENE CHLORIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	78544*GMS	CARBON DISULFIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34491*GMS	TRICHLOROFLUOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34504*GMS	1,1-DICHLOROETHYLENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34499*GMS	1,1-DICHLOROETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	96464*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/KG	ND
03/15/92	MB*QC*0315	97201*GMS	DIETHYL ETHER	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34318*GMS	CHLOROFORM	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34534*GMS	1,2-DICHLOROETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	75078*GMS	METHYL ETHYL KETONE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34509*GMS	1,1,1-TRICHL'ETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34299*GMS	CARBON TETRACHLORIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34330*GMS	BROMODICHLOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34544*GMS	1,2-DICHLOROPROPANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34702*GMS	CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34487*GMS	TRICHLOROETHENE	UG/KG-DRY	1.4
03/15/92	MB*QC*0315	34309*GMS	DIBROMOCHLOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34237*GMS	BENZENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34514*GMS	1,1,2-TRICHL'ETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34579*GMS	2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34697*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34290*GMS	BROMOFORM	UG/KG-DRY	ND
03/15/92	MB*QC*0315	75169*GMS	METHYLISOBUTYLKETONE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34478*GMS	TETRACHLOROETHENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34519*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34483*GMS	TOLUENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34304*GMS	CHLOROBENZENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	34374*GMS	ETHYLBENZENE	UG/KG-DRY	ND
03/15/92	MB*QC*0315	45510*GMS	XYLENE,TOTAL	UG/KG-DRY	ND
03/15/92	MB*QC*0315	98578*GMS	DICHLOROBENZENE,TOTAL	UG/KG-DRY	6.1
03/15/92	MB*QC*0316	34421*GMS	CHLOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34416*GMS	BROMOMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34495*GMS	VINYL CHLORIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34314*GMS	CHLOROETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34426*GMS	METHYLENE CHLORIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	78544*GMS	CARBON DISULFIDE	UG/KG-DRY	ND

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Method Blank Sample Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	FOUND
03/15/92	MB*QC*0316	34491*GMS	TRICHLOROFLUOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34504*GMS	1,1-DICHLOROETHYLENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34499*GMS	1,1-DICHLOROETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	96464*GMS	1,2-DICHLOROETHENE(TOTAL)	UG/KG	ND
03/15/92	MB*QC*0316	97201*GMS	DIETHYL ETHER	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34318*GMS	CHLOROFORM	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34534*GMS	1,2-DICHLOROETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	75078*GMS	METHYL ETHYL KETONE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34509*GMS	1,1,1-TRICHL'ETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34299*GMS	CARBON TETRACHLORIDE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34330*GMS	BROMODICHLOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34544*GMS	1,2-DICHLOROPROPANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34702*GMS	CIS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34487*GMS	TRICHLOROETHENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34309*GMS	DIBROMOCHLOROMETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34237*GMS	BENZENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34514*GMS	1,1,2-TRICHL'ETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34579*GMS	2-CHLOROETHYLVINYL- ETHER	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34697*GMS	TRANS-1,3-DICHLORO- PROPENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34290*GMS	BROMOFORM	UG/KG-DRY	ND
03/15/92	MB*QC*0316	75169*GMS	METHYLISOBUTYLKETONE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34478*GMS	TETRACHLOROETHENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34519*GMS	1,1,2,2-TETRACHLORO- ETHANE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34483*GMS	TOLUENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34304*GMS	CHLOROBENZENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	34374*GMS	ETHYLBENZENE	UG/KG-DRY	ND
03/15/92	MB*QC*0316	45510*GMS	XYLENE,TOTAL	UG/KG-DRY	ND
03/15/92	MB*QC*0316	98578*GMS	DICHLOROBENZENE,TOTAL	UG/KG-DRY	ND

Standard Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNITS	TARGET	FOUND
03/15/92	SP1*QC*0315	34504*GMS	1,1-DICHLOROETHYLENE	82	59-172	UG/KG-DRY	50	41
03/15/92	SP1*QC*0315	34487*GMS	TRICHLOROETHENE	90	62-137	UG/KG-DRY	50	45
03/15/92	SP1*QC*0315	34237*GMS	BENZENE	100	66-142	UG/KG-DRY	50	50
03/15/92	SP1*QC*0315	34483*GMS	TOLUENE	100	59-139	UG/KG-DRY	50	50
03/15/92	SP1*QC*0315	34304*GMS	CHLOROBENZENE	102	60-133	UG/KG-DRY	50	51
03/15/92	SP1*QC*0316	34504*GMS	1,1-DICHLOROETHYLENE	72	59-172	UG/KG-DRY	50	36
03/15/92	SP1*QC*0316	34487*GMS	TRICHLOROETHENE	102	62-137	UG/KG-DRY	50	51
03/15/92	SP1*QC*0316	34237*GMS	BENZENE	94	66-142	UG/KG-DRY	50	47
03/15/92	SP1*QC*0316	34483*GMS	TOLUENE	94	59-139	UG/KG-DRY	50	47
03/15/92	SP1*QC*0316	34304*GMS	CHLOROBENZENE	94	60-133	UG/KG-DRY	50	47

Sample Matrix Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	%RECV	RECV CRIT	UNSPIKED	UNITS	TARGET	FOUND	RPD
03/15/92	SPM1*WRITS1*13	34504*GMS	1,1-DICHLOROETHYLENE	83	59-172	0.0	UG/KG-DRY	59	49	
03/15/92	SPM1*WRITS1*13	34487*GMS	TRICHLOROETHENE	58	62-137	40	UG/KG-DRY	59	34	
03/15/92	SPM1*WRITS1*13	34237*GMS	BENZENE	98	66-142	0.0	UG/KG-DRY	59	58	
03/15/92	SPM1*WRITS1*13	34483*GMS	TOLUENE	98	59-139	1.9	UG/KG-DRY	59	58	
03/15/92	SPM1*WRITS1*13	34304*GMS	CHLOROBENZENE	102	60-133	0.0	UG/KG-DRY	59	60	
03/15/92	SPM2*WRITS1*13	34504*GMS	1,1-DICHLOROETHYLENE	81	59-172	0.0	UG/KG-DRY	59	48	1.2
03/15/92	SPM2*WRITS1*13	34487*GMS	TRICHLOROETHENE	64	62-137	40	UG/KG-DRY	59	38	11
03/15/92	SPM2*WRITS1*13	34237*GMS	BENZENE	97	66-142	0.0	UG/KG-DRY	59	57	1.0
03/15/92	SPM2*WRITS1*13	34483*GMS	TOLUENE	98	59-139	1.9	UG/KG-DRY	59	58	1.0
03/15/92	SPM2*WRITS1*13	34304*GMS	CHLOROBENZENE	102	60-133	0.0	UG/KG-DRY	59	60	0.0

Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/15/92	MB*QC*0315	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	46	92	70-121
03/15/92	MB*QC*0315	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	51	100	81-117
03/15/92	MB*QC*0315	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	49	98	74-121
03/16/92	MB*QC*0316	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	45	90	70-121
03/16/92	MB*QC*0316	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	50	100	81-117
03/16/92	MB*QC*0316	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	54	110	74-121
03/16/92	SP1*QC*0315	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	49	98	70-121
03/16/92	SP1*QC*0315	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/16/92	SP1*QC*0315	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	46	92	74-121
03/16/92	SP1*QC*0316	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	45	90	70-121
03/16/92	SP1*QC*0316	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/16/92	SP1*QC*0316	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	52	100	74-121
03/16/92	SPM1*WRITS1*13	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/16/92	SPM1*WRITS1*13	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	50	100	81-117
03/16/92	SPM1*WRITS1*13	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	47	94	74-121
03/16/92	SPM2*WRITS1*13	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	48	96	70-121
03/16/92	SPM2*WRITS1*13	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	51	100	81-117
03/16/92	SPM2*WRITS1*13	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	48	96	74-121

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Surrogate Spike Recovery Summary

DATE	SAMPLE	STORET	PARAMETER	UNITS	TARGET	FOUND	%RECV	RECV CRIT
03/16/92	DA*WRITS1*13	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	46	92	70-121
03/16/92	DA*WRITS1*13	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	50	100	81-117
03/16/92	DA*WRITS1*13	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	49	98	74-121
03/16/92	DA*WRITS1*1	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	47	94	70-121
03/16/92	DA*WRITS1*1	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	51	100	81-117
03/16/92	DA*WRITS1*1	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	48	96	74-121
03/16/92	DA*WRITS1*4	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	50	100	70-121
03/16/92	DA*WRITS1*4	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	53	110	81-117
03/16/92	DA*WRITS1*4	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	48	96	74-121
03/16/92	DA*WRITS1*5	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	50	100	70-121
03/16/92	DA*WRITS1*5	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	53	110	81-117
03/16/92	DA*WRITS1*5	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121
03/16/92	DA*WRITS1*6	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	49	98	70-121
03/16/92	DA*WRITS1*6	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	52	100	81-117
03/16/92	DA*WRITS1*6	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	50	100	74-121
03/16/92	DA*WRITS1*7	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	51	100	70-121
03/16/92	DA*WRITS1*7	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	51	100	81-117
03/16/92	DA*WRITS1*7	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	50	100	74-121
03/16/92	DA*WRITS1*8	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	50	100	70-121
03/16/92	DA*WRITS1*8	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	51	100	81-117
03/16/92	DA*WRITS1*8	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	50	100	74-121
03/16/92	DA*WRITS1*2	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	43	86	70-121
03/16/92	DA*WRITS1*2	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/16/92	DA*WRITS1*2	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	50	100	74-121
03/16/92	DA*WRITS1*3	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	44	88	70-121
03/16/92	DA*WRITS1*3	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	49	98	81-117
03/16/92	DA*WRITS1*3	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121
03/16/92	DA*WRITS1*9	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	45	90	70-121
03/16/92	DA*WRITS1*9	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/16/92	DA*WRITS1*9	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121
03/16/92	DA*WRITS1*10	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	46	92	70-121
03/16/92	DA*WRITS1*10	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/16/92	DA*WRITS1*10	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121
03/16/92	DA*WRITS1*12	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	43	86	70-121
03/16/92	DA*WRITS1*12	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	46	92	81-117
03/16/92	DA*WRITS1*12	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	49	98	74-121
03/16/92	DA*WRITS1*14	97031*SUR	1,2-DICHLOROETHANE-D(4)	UG/KG-DRY	50	44	88	70-121
03/16/92	DA*WRITS1*14	97026*SUR	TOLUENE-D(8)	UG/KG-DRY	50	48	96	81-117
03/16/92	DA*WRITS1*14	97027*SUR	BROMOFLUOROBENZENE	UG/KG-DRY	50	51	100	74-121

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Environmental Science and Engineering Analytical Services

Computer QC Checks

Batch No.: G26918 Analysis Date: 03/15/92 Analyst: LARRY SHROADS

	Yes	No	"Exceptions" Comment / Corrective Action
Analysis holding time within criteria?	X		
Extract holding time within criteria?	X		
Method blank present?	X		
Method blank within acceptance criteria?	X		
Standard matrix spike present?	X		
Standard matrix spike within acceptance criteria?	X		
Sample matrix spike present?	X		
Sample matrix spike within acceptance criteria?		X	34487*GMS
Sample matrix spike duplicate present?	X		
Sample matrix spike duplicate within acceptance criteria?	X		
Surrogate present?	X		
Surrogate within acceptance criteria?	X		

Note: Any "NO" answer requires a comment.

OVERRIDE COMMENTS

PROB.:SAMPLE MATRIX SPIKE NOT WITHIN ACCEPTANCE CRITERIA.
EXPL.:TRICHLOROETHANE WAS FOUND IN THE UNSPIKED
SAMPLE AT A LEVEL THAT WAS SIGNIFICANT WHEN
IT WAS SUBTRACTED FROM THE SPIKED SAMPLE./ALS