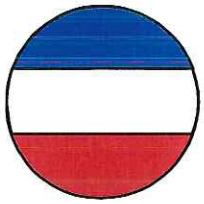
FINAL



FORSCOM

3D Inf Div (Mech)

FIRST ANNUAL MONITORING ONLY REPORT
for
FORMER UNDERGROUND STORAGE TANKS #1-#16
FACILITY ID NUMBER 9025035 and 9025049
FORMER BUILDING 728
HUNTER ARMY AIRFIELD, GEORGIA

Prepared for:

U.S. Army Corps of Engineers-Savannah District
And Fort Stewart Directorate of Public Works
Under Contract Number DACA01-96-D-0020
Delivery Order CV03

Prepared by:

Metcalf & Eddy, Inc.
Two Sun Court
Suite 200
Norcross, Georgia 30092

November 1999

DOCUMENT 7

FIRST ANNUAL MONITORING ONLY REPORT
FOR
FORMER BUILDING 728
FACILITY IDENTIFICATION NUMBER 9025035 and 9025049
HUNTER ARMY AIRFIELD, GEORGIA

TABLE OF CONTENTS

EXHIBITS

REFERENCES

Metcalf & Eddy, Inc., Final Corrective Action Plan-Part A, Phase I Site Investigation of the Airport Hydrant System (Building 728), Facility ID: 9025035 and 9025049, August 1996.

Metcalf & Eddy, Inc., Final Corrective Action Plan-Part B, Former Building 728, EPD Facility No. 9025035 and 9025049, December 1997.

1.0 EXECUTIVE SUMMARY

The former Building 728 site consisted of twelve USTs and eight oil/ water separators associated with the former Northern Fuel Battery and four USTs located south of the fuel battery. The former Building 728 site is located on the northwestern portion of Hunter Army Airfield (HAAF). During the 1940s, the tanks held aviation fuel that was pumped via pipelines to fueling pits on the runway. Around 1957, the entire system was converted to store an alcohol/water mixture used as an aircraft de-icer. Later, some of the tanks near former Building 728 were used to store waste oil. The four USTs located directly adjacent to former Building 728 had a capacity of 12,000 gallons. These tanks held aviation fuel and appear to have been part of the fuel hydrant system.

Anderson Columbia Environmental, Inc. (ACE) completed UST removal activities in the former Building 728 area in June 1994. A total of 25 tanks (12 JP-4/aviation gas USTs, 4 aviation gas USTs, 8 oil/water separators, 1 water control pit) were removed. Soil and groundwater samples were collected below the tank excavations in accordance with Georgia EPD UST closure requirements. Contamination in soil and groundwater has been confirmed by the sampling and no free product was encountered during the removal activities.

Metcalf & Eddy completed an initial investigation of the former Building 728 area in September 1995. The findings of the subsurface investigation were summarized in the Final CAP-Part A submitted to the Georgia EPD in August 1996. A summary of the UST closure activities was also presented in the CAP-Part A. A CAP-Part B was prepared after a follow up investigation of the former Building 728 site. The CAP-Part B was submitted to the EPD in December 1997. Free product was detected in monitoring wells MW08, MW59, and MW62. Free product recovery was performed utilizing a belt skimmer at well MW08 and absorbent socks (changed monthly) at wells MW59 and MW62. The belt skimmer and absorbent socks were discontinued in May 1999. An active remediation pilot study conduced by Science Applications International Company (SAIC) began in May 1999 and is ongoing.

Groundwater table elevations were measured in twenty monitoring wells during each sampling event in order to determine the direction of groundwater flow. Groundwater levels fluctuated less than 1 foot in elevation over the annual monitoring period. The potentiometric surface indicates groundwater flow is generally to the northwest with a gradient of approximately 0.006 ft/ft. No significant changes were observed in the potentiometric surface, flow direction, or gradient during the past year of monitoring.

Eight monitoring wells (MW01, MW06, MW11, MW60, MW61, MW63, MW64, and MW65) were purged and sampled during each sampling event. Surface water and sediment samples were also collected during each sampling event. A sample from the adjacent potable well (Hunter 1) was also collected during the monitoring period under a separate contract. All samples (including the potable well samples) were analyzed for

benzene, toluene, ethylbenzene, xylenes (BTEX - Method 8021) and polynuclear aromatic hydrocarbons (PAHs - Method 8310). Additionally, sediment samples were also analyzed for total petroleum hydrocarbons-diesel range organics (DRO) and gasoline range organics (GRO) (both Method 8015M).

Analytical results confirm wells MW06, MW11, MW60, MW61, MW63, and MW64 remain impacted by petroleum hydrocarbons. Benzene and PAHs have been detected above Georgia EPD in-stream water quality standards (IWQS) in these wells with the exception of MW06.

Surface water results indicate several PAH compounds exceeded the IWQS and all BTEX compounds were below IWQS. Sediment was not present at the SWE01 location and was therefore collected only from SWE03. Sediment sample analytical results indicate soil threshold level (STL) exceedences for PAHs have occurred but BTEX compounds were within STL criteria.

This Annual Monitoring Only Report incorporates the First through Fourth Quarterly Monitoring Only Reports in **Exhibits A** through **D**, respectively. The quarterly reports document the activities and findings for the past year of monitoring (May 1998 through May 1999) at former Building 728. Fort Stewart recommends implementation of a pilot study and monthly BTEX monitoring through April 2000. The BTEX monitoring activities will allow for evaluation of remedial effectiveness. An evaluation report will be submitted to summarize the pilot study data. More aggressive free product recovery measures may be undertaken based on the effectiveness of the SAIC pilot remediation system.

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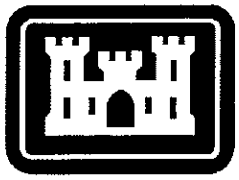
EXHIBIT A

FIRST QUARTERLY MONITORING ONLY REPORT



U.S. Army Corps
of Engineers

FINAL FIRST QUARTERLY MONITORING PROGRESS REPORT FORMER BUILDING 728 EPD FACILITY NO. 9025035 and 9025049

at

HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

under

Contract No. DACA01-96-D-0020
Delivery Order No. CV03

October 1998

Submitted to:

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH, GEORGIA

Prepared by:

METCALF & EDDY, INC.
ATLANTA, GEORGIA

FINAL FIRST QUARTERLY MONITORING PROGRESS REPORT
FORMER BUILDING 728
EPD FACILITY NO. 9025035 AND 9025049
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

TABLE OF CONTENTS

MONITORING ONLY REPORT

Submittal Date: October 7, 1998 Monitoring Report Number: 01

For Period Covering: May 1998 to July, 1998

Facility Name: Former Building 728 Street Address: Hunter Army Airfield

Facility ID: 9025035 and 9025049 City: Savannah County: Chatham Zip Code 31409

Latitude: 32° 01' 48" Longitude: 81° 08' 03"

Submitted by UST Owner/Operator:

Name: Mr. Tom Fry

Company: HQs, 3d ID (Mech) & Fort Stewart

Address: 1557 Frank Cochran Drive

City: Fort Stewart State: GA

Zip Code: 31314-4928

Telephone: 912-767-1078

Prepared by Consultant/Contractor:

Name: David Wilderman

Company: Metcalf & Eddy, Inc.

Address: 1201 Peachtree St. N.E.
400 Colony Square, Suite 1101

City: Atlanta State: GA

Zip Code: 30361

Telephone: 404-881-8010

I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

I hereby certify that I have directed and supervised the field work and preparation of this plan, in accordance with State Rules and Regulations. As a registered professional geologist and/or professional engineer, I certify that I am a qualified groundwater professional, as defined by the Georgia State Board of Professional Geologist. All of the information and laboratory data in this plan and in all of the attachments are true, accurate, complete, and in accordance with applicable State Rules and Regulations.

Name: DAVID WILDERMAN

Signature:

Date: 10·8·98

Georgia Stamp or Seal

II. PROJECT SUMMARY

(Appendix I, Figure 1: Site Location Map)

Provide a brief description or explanation of the site and a brief chronology of environmental events leading up to this report.

The former Building 728 site consisted of twelve USTs and eight oil/ water separators associated with the former Northern Fuel Battery and four USTs located near the rail spur; south of the fuel battery. The former Building 728 site is located on the northwestern portion of Hunter Army Airfield (HAAF) as illustrated in **Appendix I, Figure 1**. A plan view of the former Northern Fuel Battery area is provided on **Figure 2a** in **Appendix I**. During the 1940s, the tanks held aviation fuel which was pumped via pipelines to fueling pits on the runway. Around 1957, the entire system was converted to store an alcohol/water mixture used as an aircraft de-icer. Later, some of the tanks near former Building 728 were used to store waste oil. The four USTs located directly adjacent to former Building 728 had a capacity of 12,000 gallons. These tanks held aviation fuel and appear to have been part of the fuel hydrant system.

UST removal activities in the former Building 728 area were completed by Anderson Columbia Environmental, Inc. (ACE) in June 1994. A total of 43,140 gallons of hazardous and non-hazardous waste water was disposed of by Industrial Water Services, Inc. A total of 25 tanks (12 JP-4/aviation gas USTs, 4 aviation gas USTs, 8 oil/water separators, 1 water control pit) were removed. During tank removal activities, 2623.91 tons of soil was removed and transported to Laidlaw Environmental Services for incineration. Soil and groundwater samples were collected below the tank excavations in accordance with Georgia EPD UST closure requirements. Contamination in soil and groundwater has been confirmed by the sampling and no free product was encountered during the removal activities.

Metcalf & Eddy completed an initial investigation of the former Building 728 area in September 1995. The findings of the subsurface investigation were summarized in the Final CAP-Part A submitted to the Georgia EPD UST Program in August 1996. A summary of the UST closure activities was also presented in the CAP-Part A. A follow up investigation of the former Building 728 site culminated in the submittal of a CAP-Part B which was submitted to the EPD in December 1997. Free product was detected in monitoring wells MW08, MW59, and MW62. Free product recovery is ongoing utilizing a skimmer at well MW08 and absorbent socks (changed monthly) at wells MW59 and MW62. Pending funding for a remediation system recommended in the CAP-Part B, the USACE elected to perform quarterly monitoring which may aid in the design of the remediation system. This report documents the first quarterly sampling and analytical results.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

Groundwater table elevations were measured in twenty monitoring wells on July 29, 1998 in order to determine the direction of groundwater flow. Eight monitoring wells (MW01, MW06, MW11, MW60, MW61, MW63, MW64, and MW65) were selected for sampling by the USACE. These monitoring wells were purged and sampled on July 29, 1998. All samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX - Method 8021) and polynuclear aromatic hydrocarbons (PAHs - Method 8310). Purge water was containerized in drums and stored at the PDO Yard until proper disposal is arranged. Surface water samples were collected from SWE-01 (upgradient) and SWE-03 (downgradient) with a sediment sample collected from SWE-03 since no sediment was observed at SWE-01. The surface water and sediment samples were collected on July 30, 1998. Surface water and sediment were analyzed for BTEX and PAHs as above with the additional sediment analyses of total petroleum hydrocarbons-diesel range organics (DRO) and gasoline range organics (GRO) (both Method 8015M)

A. Potentiometric Data:

*Tabulate all data and illustrate last 2 monitoring events findings in **Figures 2a and 2b.***
***(Appendix I, Figure 2a and 2b:** Potentiometric Surface Maps)*
***(Appendix II, Table 1:** Groundwater Elevations)*

Discuss groundwater flow at this site and implications for this project.

Water levels were measured in twenty monitoring wells (the two deep wells were not measured) on July 29, 1998. **Table 1** in **Appendix II** lists the wells and water level elevations. Compared to the CAP-Part B measurements taken on March 31, 1997, water levels are an average of 0.21 feet higher. **Figures 2a** and **2b** shows the potentiometric surface map generated from the water levels from the CAP-Part B and first quarter sampling, respectively. Groundwater flow is generally to the northwest with a gradient of approximately 0.006 ft/ft. No significant changes were observed in the potentiometric surface, flow direction, or gradient compared to the information presented in the CAP-Part B report.

B. Analytical Data:

*Tabulate all data for monitoring events findings in **Table 2**, illustrate last two events findings in **Figures 3a and 3b**, and graph the trend of contaminant concentration in **Figure 4**.*
***(Appendix I, Figure 3a and 3b:** Groundwater Quality Maps)*
***(Appendix I, Figure 4:** Trend of Contaminant Concentrations)*
***(Appendix I I, Table 2:** Groundwater Analysis Results)*
(Appendix III, Laboratory Analysis Results)

Discuss groundwater analysis results, trend of contaminant concentrations, and implications for this project.

Well sampling began with the well located in the area suspected of least contamination. Protective gloves were worn during sampling and changed between samples. The sampling procedures used were identical to those used in previous sampling episodes (CAP-Part A and B). Samples were shipped via Federal Express overnight to Analytical Services, Inc. (ASI) located in Norcross, Georgia for BTEX and PAH analyses. Analytical results are summarized in **Table 2**.

The eight monitoring wells and the potable well (Hunter 1) were sampled on July 29, 1998 for BTEX (Method 8020) and PAHs (Method 8310). Analytical results confirm wells MW06, MW11, MW60, MW63, and MW64 remain impacted by petroleum hydrocarbons as identified in the previous sampling episodes. Concentrations of benzene and total BTEX decreased significantly in MW11 and MW63 and increased significantly in MW60 and MW64. Benzene decreased in MW11 from 1700 to 95 µg/L and BTEX decreased from 4980 to 238 µg/L. MW63 exhibited a benzene decrease from 2400 to 930 µg/L and BTEX decreased from 5160 to 1601 µg/L. Benzene and BTEX increased in MW60 from 1400 to 3000 µg/L and 3570 to 6960 µg/L, respectively. MW64 also exhibited benzene and BTEX increases of 81 to 450 µg/L and 487 to 2850 µg/L respectively. No significant changes were observed at MW01, MW06, MW61, and MW65. The benzene concentrations at MW11, MW60, MW61, MW63, and MW64 exceed the Georgia EPD In-Stream Water Quality Standard (IWQS) of 71.28 µg/L (**Table 2**). **Figure 4** lists the benzene concentrations for each quarter plus a graph of the benzene values over time. **Figures 3a** and **3b** show the concentrations of hydrocarbons in groundwater from the CAP-Part B and first quarterly monitoring period, respectively.

PAHs were detected in every well sampled. The IWQS (0.0311 µg/L for individual compounds) was exceeded at MW01, MW06, MW60, MW63, and MW64 but not at MW11, MW61, and MW64. The regulated PAHs that were exceeded are benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoroethene, and chrysene. No apparent distribution pattern is observed. The PAHs identified are indicative of a diesel source rather than gasoline.

The potable water supply well was also sampled for BTEX and PAHs. Only fluorene was detected at 0.095 µg/L. Last quarter, only acenaphthene was detected so no clear pattern is emerging. No maximum contaminant level (MCL) is listed for fluorene.

Surface water results indicate no IWQS exceedences of BTEX or PAH compounds (**Table 3**). Benzene was detected at 2.9 µg/L at SWE01 (upgradient) but was not detected at SWE03 (downgradient). **Figures 3a** and **3b** show the two surface water sampling locations and results.

Sediment was not observed at SWE01 and was therefore collected only from SWE03. The analytical results (**Table 4**) indicate no impact from BTEX, PAHs or GRO compounds. DRO was detected at 23 mg/kg. All analytical data is presented in **Appendix III**.

IV. SITE RANKING *(NOTE: RE-RANK SITE AFTER EACH MONITORING EVENT)*

(Appendix IV: Site ranking results)

Environmental Site Sensitive Score: 175,600
The Site Ranking Form is presented in **Appendix IV**.

V. CONCLUSIONS/RECOMMENDATIONS

Provide justification of no-further-action-required recommendation or briefly discuss future monitoring plans for this site.

This completes the first quarter of monitoring at this site. No significant changes in the groundwater flow direction or gradient were observed. Soluble petroleum hydrocarbon constituents continue to impact six monitoring wells and PAHs impact five wells. Free product recovery will continue in monitoring well MW08 via the belt skimmer and in wells MW59 and MW62 via absorbent socks. Continued monitoring will determine whether or not the plume is migrating downgradient.

VI. REIMBURSEMENT ATTACHED N/A

(Appendix V: Reimbursement Application)

Fort Stewart is a federal installation and is not eligible for funding through the GUST Trust Fund.

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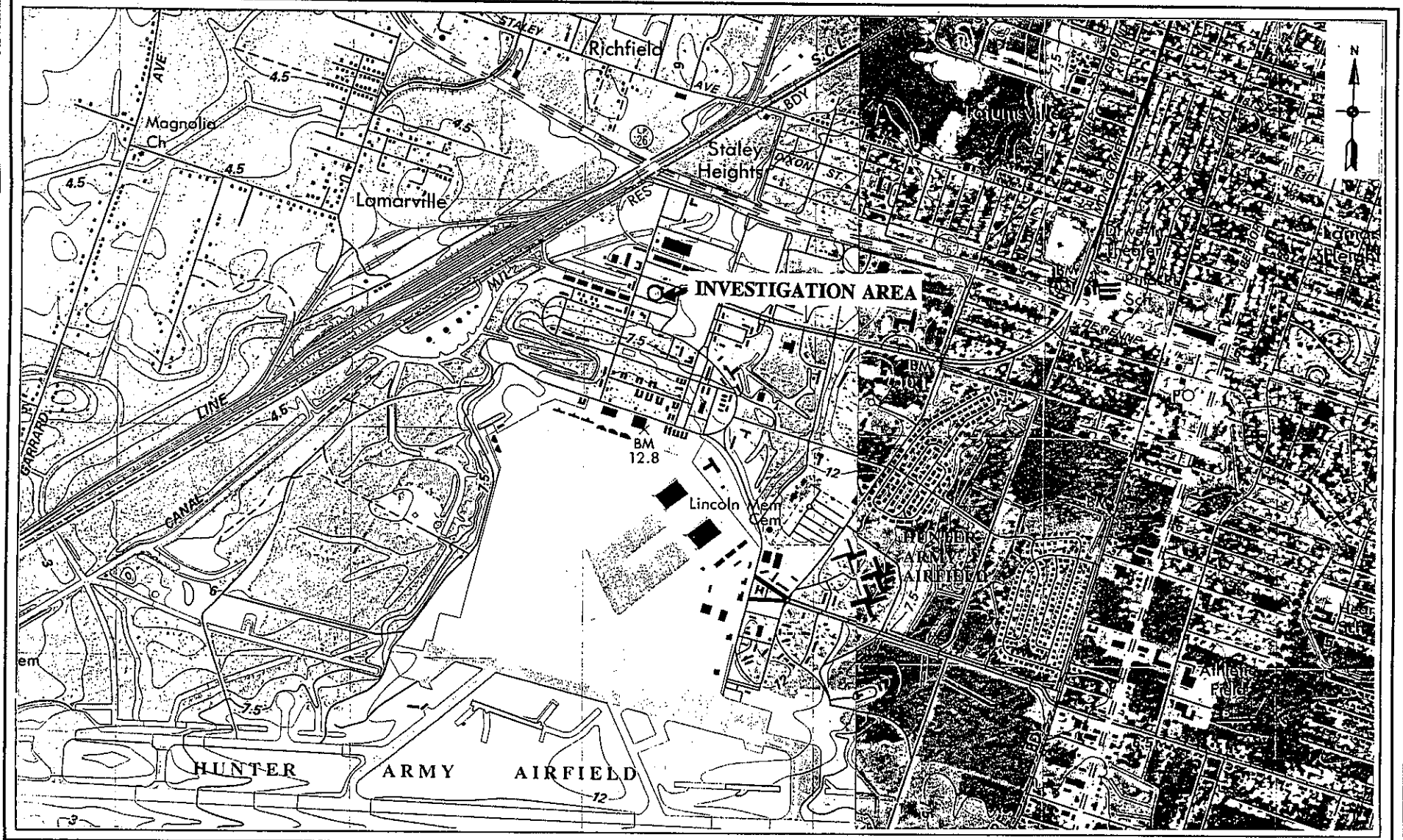


METCALF & EDDY

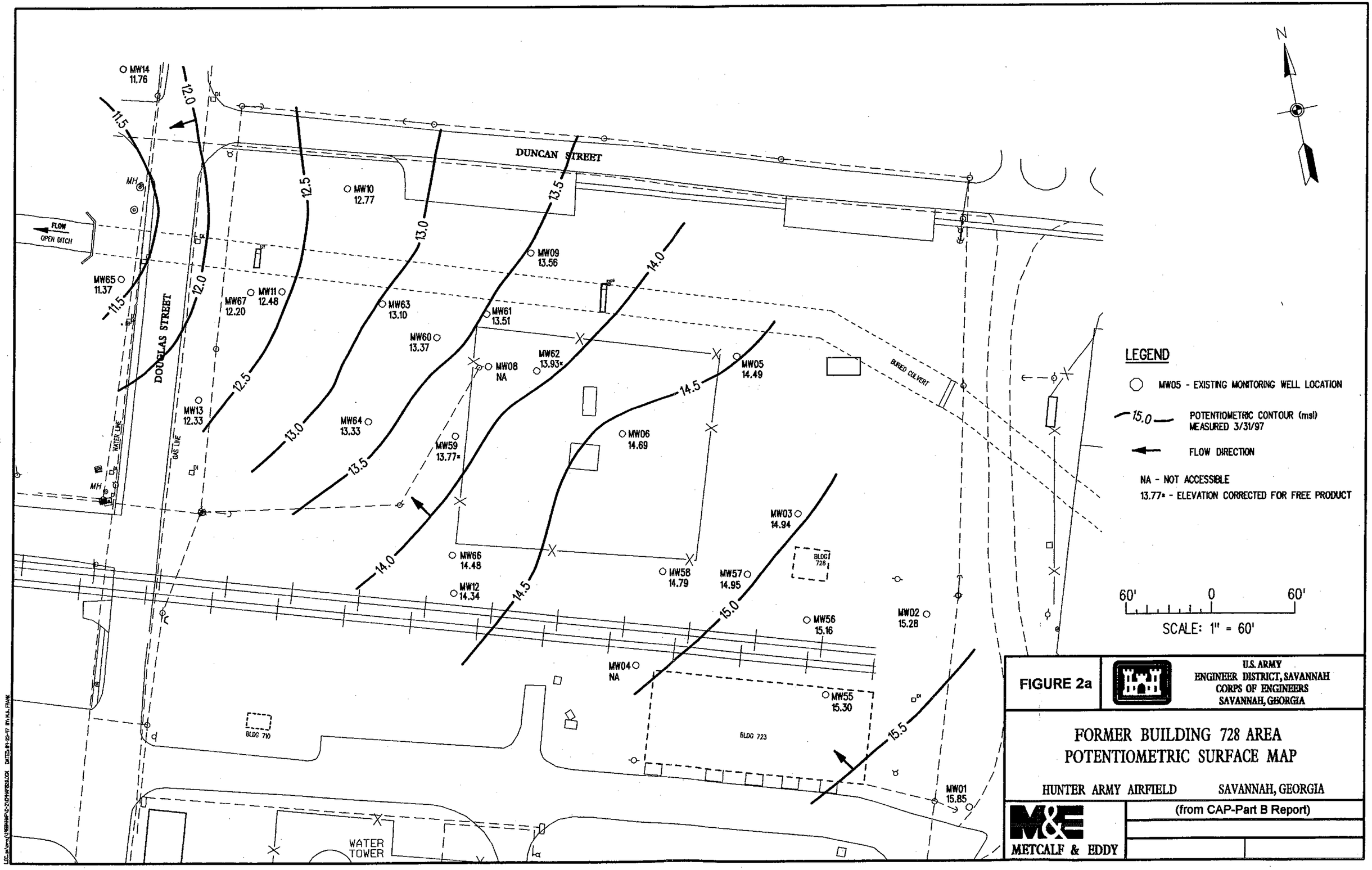
SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

AIRFIELD LOCATION MAP
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

SOURCE: GARDEN CITY AND SAVANNAH, GA USGS QUADRANGLE MAPS, 1978

FIGURE 1


DUNCAN STREET
DOUGLAS STREET
FLOW
OPEN DITCH
MW14
11.76
MW10
12.77
MW09
13.56
MW65
11.37
MW67
12.20
MW11
12.48
MW63
13.10
MW61
13.51
MW60
13.37
MW62
13.93*
MW08
NA
MW05
14.49
MW13
12.33
MW64
13.33
MW59
13.77*
MW06
14.69
MW03
14.94
MW66
14.48
MW58
14.79
MW57
14.95
MW12
14.34
MW56
15.16
MW02
15.28
MW04
NA
MW55
15.30
MW01
15.85
BURIED CULVERT
BLDG 728
BLDG 710
BLDG 723
WATER TOWER
WATER LINE
GAS LINE
MH
11.5
12.0
12.5
13.0
13.5
14.0
14.5
15.0
15.5
N
LEGEND
MW05 - EXISTING MONITORING WELL LOCATION
15.0 POTENTIOMETRIC CONTOUR (msl) MEASURED 3/31/97
FLOW DIRECTION
NA - NOT ACCESSIBLE
13.77* - ELEVATION CORRECTED FOR FREE PRODUCT
60' 0 60'
SCALE: 1" = 60'
FIGURE 2a
U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA
FORMER BUILDING 728 AREA
POTENTIOMETRIC SURFACE MAP
HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA
(from CAP-Part B Report)
METCALF & EDDY

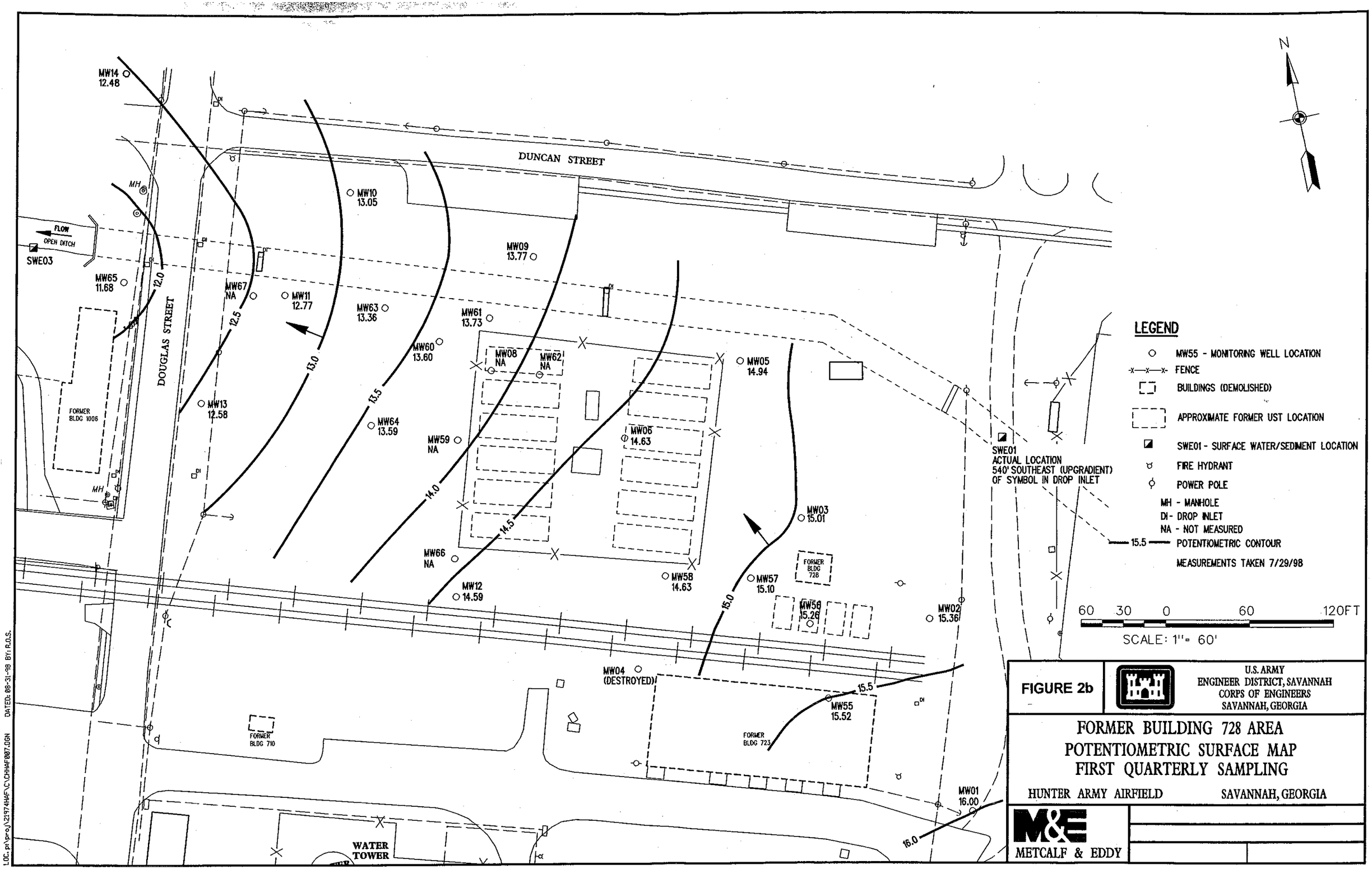


FIGURE 2b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
POTENTIOMETRIC SURFACE MAP
FIRST QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

M&E
METCALF & EDDY

LOC: p:\pr=oJ\21974HAF\C\CHHAF007.DGN DATED: 08-31-98 BY: R.O.S.

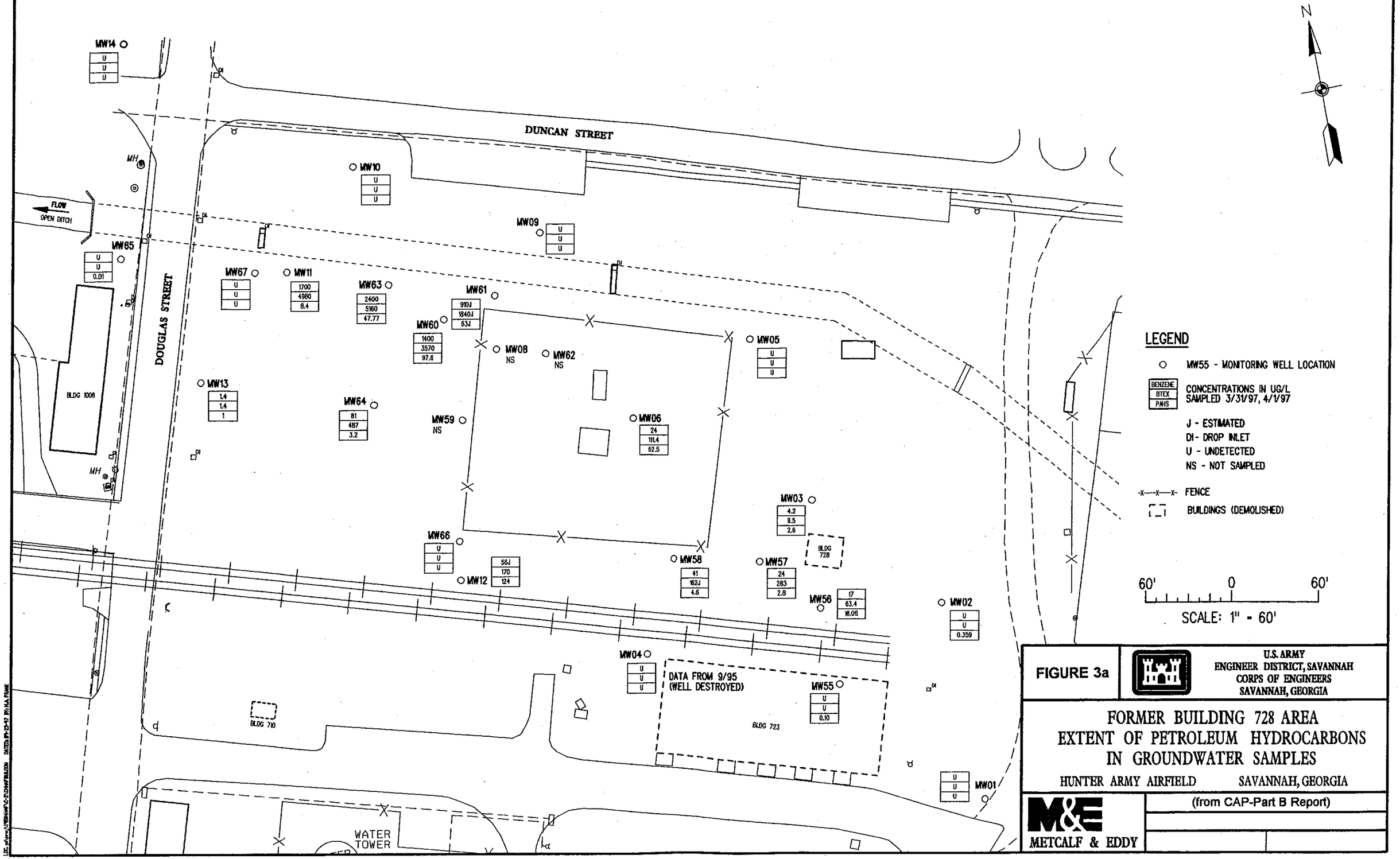


FIGURE 3a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
EXTENT OF PETROLEUM HYDROCARBONS IN GROUNDWATER SAMPLES

HUNTER army AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

(from CAP-Part B Report)

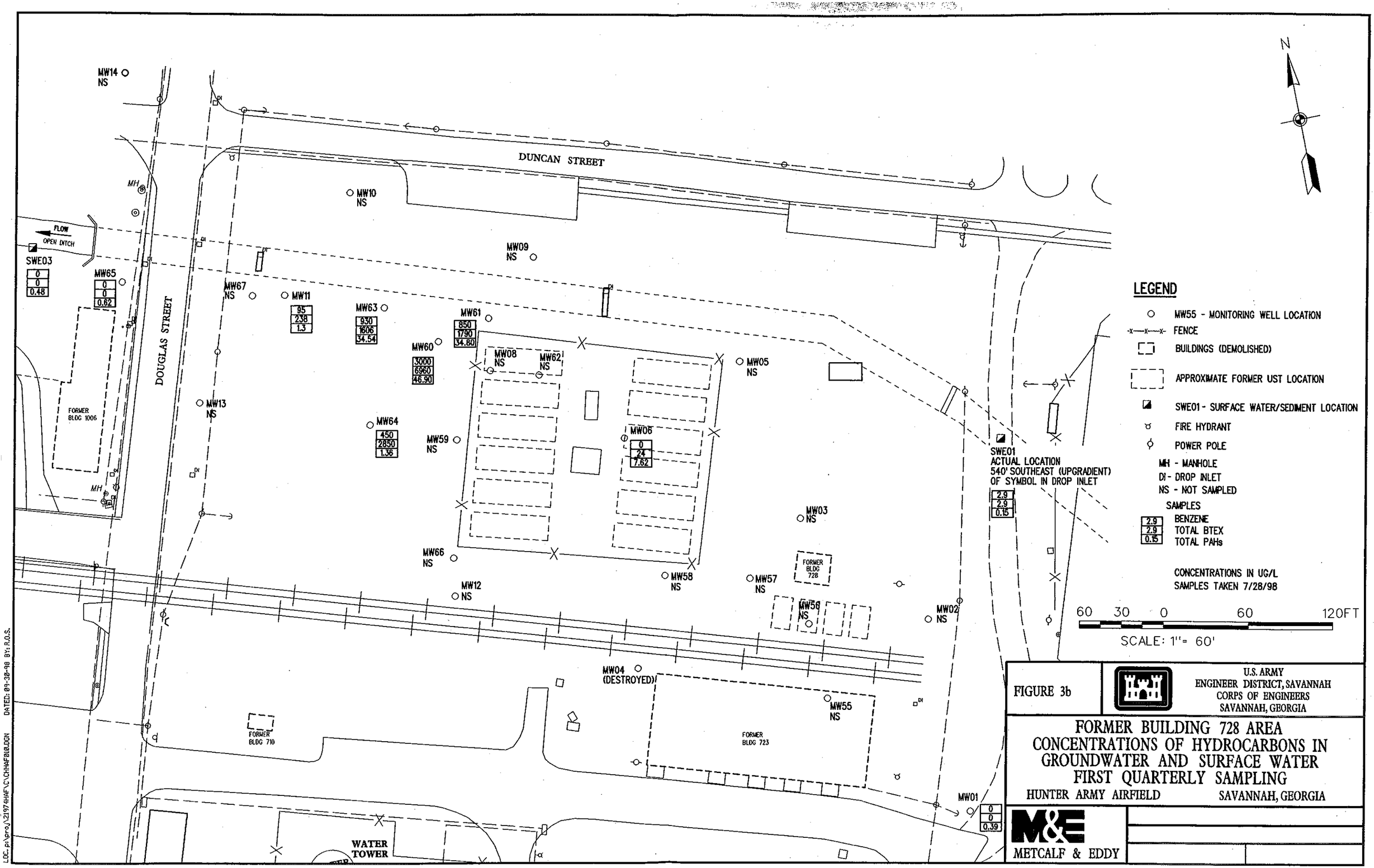


FIGURE 3b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA CONCENTRATIONS OF HYDROCARBONS IN GROUNDWATER AND SURFACE WATER FIRST QUARTERLY SAMPLING

HUNTER army AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

LOC: p:\proj\21974HAF\C\CHHAF01B.DGN DATED: 09-30-98 BY: R.O.S.

FIGURE 4

ANNUAL MONITORING SPREADSHEET (BENZENE) - FIRST QUARTER
FORMER BUILDING 728
HUNTER ARMY AIRFIELD

	BENZENE RESULTS (ug/L)								
WELL #	CAP-B	1'st QTR	2'nd QTR	3'rd QTR	4'th QTR	5'th QTR	6'th QTR	7'th QTR	8'th QTR
MW01	0	0							
MW02	0	NS							
MW03	4.2	NS							
MW05	0	NS							
MW06	24	0							
MW09	0	NS							
MW10	0	NS							
MW11	1700	95							
MW12	56	NS							
MW13	1.4	NS							
MW14	0	NS							
MW55	0	NS							
MW56	17	NS							
MW57	24	NS							
MW58	41	NS							
MW60	1400	3000							
MW61	910	850							
MW63	2400	930							
MW64	81	450							
MW65	0	0							
SMW01	0	0							

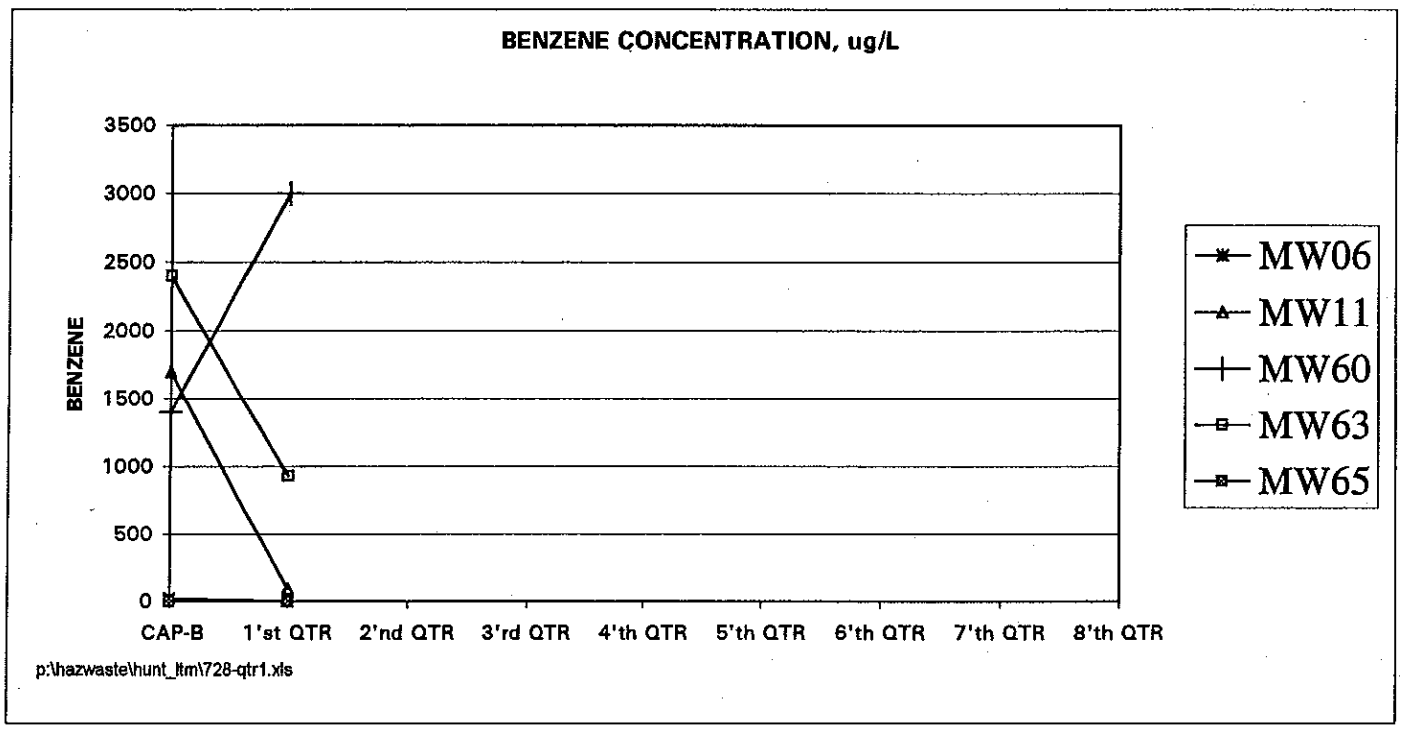


TABLE 1: GROUNDWATER ELEVATIONS
Former Building 728
Hunter Army Airfield
Chatham County, Facility ID Nos. 9025035 and 9025049

Location	Screen Interval ft, bgs	Water Depth, TOC	TOC Elevation, ft, msl	Water Level Elevation, ft, msl	Surface Elevation, ft, msl	Free Prod. Thickness ft.
CAP-A						
MW01	3.2-13.2	3.20	19.20	16.00	19.5	
MW02	3.8-13.8	5.15	20.51	15.36	20.8	
MW03	2.6-12.6	5.79	20.80	15.01	21.1	
MW04	3.4-13.4	Destroyed	3/97			
MW05	3.3-13.3	5.43	20.37	14.94	20.7	
MW06	2.9-12.9	5.39	20.02	14.63	20.4	
MW08	3.5-13.5	Product	Recovery		19.6	1.3 (2/96)
MW09	3.1-13.1	6.50	20.27	13.77	20.5	
MW10	2.9-12.9	6.06	19.11	13.05	19.4	
MW11	2.3-12.3	6.12	18.89	12.77	19.3	
MW12	2.9-12.9	3.92	18.51	14.59	18.8	
MW13	4.0-14.0	5.81	18.39	12.58	18.7	
MW14	4.0-14.0	6.28	18.76	12.48	19.0	
CAP-B						
MW55	2.0-12.0	2.80	18.32	15.52	18.5	
MW56	1.4-11.4	4.43	19.69	15.26	19.8	
MW57	2.0-12.0	5.00	20.10	15.10	20.3	
MW58	2.0-12.0	4.58	19.21	14.63	19.4	
MW59	2.0-12.0	Product	Recovery	NA	19.4	0.15 (3/97)
MW60	3.0-13.0	6.70	20.30	13.60	20.4	
MW61	3.0-13.0	6.61	20.34	13.73	20.5	
MW62	3.0-13.0	Product	Recovery	NA	19.9	0.81 (3/97)
MW63	4.0-14.0	6.79	20.15	13.36	20.3	
MW64	3.0-13.0	5.39	18.98	13.59	19.1	
MW65	3.0-13.0	6.73	18.41	11.68	18.6	
MW66	35.6-40.6	NA	18.60	NA	18.8	
MW67	33.0-38.0	NA	18.82	NA	19.0	

bgs-below ground surface

TOC-top of casing

msl-mean sea level

Measurements on 7/29/98

NA- not measured

(p:\hazwaste\hunt_ltm\wellsum.xls)

TABLE 2 : GROUNDWATER ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
MW01	7/29/98	Primary	U	U	U	U	U	0.4
MW06	7/29/98	Primary	U	3	21	U	24	7.6
MW11	7/29/98	Primary	95	U	23	120	238	1.3
MW11	7/29/98	Duplicate 1	59	U	14	75	148	2.5
MW60	7/29/98	Primary	3000	560	700	2700	6960	46.9
MW61	7/29/98	Primary	850	220	120	600	1790	34.8
MW63	7/29/98	Primary	930	74	92	510	1606	34.6
MW64	7/29/98	Primary	450	680	220	1500	2850	1.4
MW65	7/29/98	Primary	U	U	U	U	U	0.6
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.

TABLE 3 : SURFACE WATER ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
SW0102	7/30/98	Primary	2.9	U	U	U	2.9	0.2
SW1002	7/30/98	Duplicate	3	2	U	U	5.0	0.9
SW0302	7/30/98	Primary	U	U	U	U	U	0.5
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.

TABLE 4 : SEDIMENT ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TOTAL BTEX (mg/kg)	TOTAL PAH (mg/kg)
SE1002	7/30/98	Duplicate	U	U	U	U	U	U
SE0302	7/30/98	Primary	U	U	U	U	U	U
ARARS		STL	0.017	115	18	700	-	-

U = Not Detected.
(-) = No STL listed.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS
GROUNDWATER & SURFACE WATER

CONSTITUENT (Units in ug/L)	SITE	728MW01	728MW06	728MW11	728MW11	728MW60	728MW61
	SAMPLE ID	728-MW0102	728-MW0602	728-MW1102	728-MW8002	728-MW6002	728-MW6102
	DATE	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98	07/29/98
	RESULT TYPE	Primary	Primary	Primary	Duplicate 1	Primary	Primary
Benzene		<2	<2	95	59	3000	850
Toluene		<2	3.0	<2	<2	560	220
Ethylbenzene		<2	21	23	14	700	120
Xylene (total)		<5	<5	120	75	2700	600
Chlorobenzene		<10	<10	<10	<10	<100	<10
1,2-Dichlorobenzene		<10	<10	<10	<10	<100	<10
1,3-Dichlorobenzene		<10	<10	<10	<10	<100	<10
1,4-Dichlorobenzene		<10	<10	<10	<10	<100	<10
		---	---	---	---	---	---
Acenaphthene		<0.302 J	<0.302 J	<0.302	<0.302	1.6	2.9
Acenaphthylene		<0.164 J	<0.164	1.3	2.0	40	30
Anthracene		<0.097	0.38 J	<0.097	<0.097	0.10	0.12
Benzo(a)anthracene		<0.0311	0.39 J	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(a)pyrene		<0.0311	0.11 J	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		0.18 J	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		0.13 J	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Chrysene		0.080 J	0.34 J	<0.0311	0.18	0.20	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031 J	<0.031	<0.031	<0.031	<0.031
Fluoranthene		<0.123	1.2	<0.123	0.36	<0.123	<0.123
Fluorene		<0.092	1.8 J	<0.092	<0.092	1.9	0.88
Indeno(1,2,3-c,d)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Naphthalene		<0.214 J	<0.214 J	<0.214	<0.214	1.7	<0.214
Phenanthrene		<0.103	2.3 J	<0.103	0.13	0.86	0.90
Pyrene		<0.107	1.1 J	<0.107	<0.107	0.69	<0.107

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHODS:8020,8310. For RCL 8000ABASI J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS
GROUNDWATER & SURFACE WATER

CONSTITUENT (Units in ug/L)	SITE	728MW63	728MW64	728MW65	728SWE01	728SWE01	728SWE03
	SAMPLE ID	728-MW6302	728-MW6402	728-MW6502	728-SW0102	728-SW1002	728-SW0302
	DATE	07/29/98	07/29/98	07/29/98	07/30/98	07/30/98	07/30/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Benzene		930	450	<2	2.9	3.0	<2
Toluene		74	680	<2	<2	2.0	<2
Ethylbenzene		92	220	<2	<2	<2	<2
Xylene (total)		510	1500	<5	<5	<5	<5
Chlorobenzene		<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene		<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene		<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene		<10	<10	<10	<10	<10	<10
		---	---	---	---	---	---
Acenaphthene		<0.302	<0.302	<0.302	<0.302	<0.302	<0.302
Acenaphthylene		30	<0.164	<0.164	<0.164	<0.164	<0.164
Anthracene		<0.097	<0.097	<0.097	<0.097	<0.097	0.13
Benzo(a)anthracene		0.22	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		<0.0311	<0.0311	0.092	0.15	0.15	0.086
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	0.14	<0.0311	<0.0311	<0.0311
Chrysene		0.17	<0.0311	<0.0311	<0.0311	0.12	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031	<0.031	<0.031	<0.031	<0.031
Fluoranthene		<0.123	<0.123	<0.123	<0.123	<0.123	<0.123
Fluorene		1.2	1.1	0.11	<0.092	<0.092	<0.092
Indeno(1,2,3-c,d)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Naphthalene		2.9	<0.214	0.28	<0.214	0.63	0.26
Phenanthrene		0.27	0.26	<0.103	<0.103	<0.103	<0.103
Pyrene		<0.107	<0.107	<0.107	<0.107	<0.107	<0.107

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

EPA METHO 020,8310. For RCL 8000ABASI RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS
SEDIMENT SAMPLES

CONSTITUENT (Units in mg/kg)	SITE	728SWE03	728SWE03
	SAMPLE ID	728-SE0302	728-SE1002
	DATE	07/30/98	07/30/98
	DEPTH (ft)	0.00	0.00
	RESULT TYPE	Primary	Duplicate 1
Benzene		<0.0063	<0.0064
Toluene		<0.0063	<0.0064
Ethyl benzene		<0.0063	<0.0064
Xylene (total)		<0.0063	<0.0064
		---	---
Acenaphthene		<1.3	<1.3
Acenaphthylene		<1.3	<1.3
Anthracene		<1.3	<1.3
Benzo(a)anthracene		<1.3	<1.3
Benzo(a)pyrene		<1.3	<1.3
Benzo(b)fluoranthene		<1.3	<1.3
Benzo(ghi)perylene		<1.3	<1.3
Benzo(k)fluoranthene		<1.3	<1.3
Chrysene		<1.3	<1.3
Dibenzo(a,h)anthracene		<1.3	<1.3
Fluoranthene		<1.3	<1.3
Fluorene		<1.3	<1.3
Indeno(1,2,3-c,d)pyrene		<1.3	<1.3
Naphthalene		<1.3	<1.3
Phenanthrene		<1.3	<1.3
Pyrene		<1.3	<1.3
		—	—
DRO		23	90
GRO		<6.3	<6.4

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHODS:8020,8310,DRO,GRO. For RCL 8000AJASI J = RESULT IS ESTIMATED R = RESULT IS REJECTED

10'th QUARTERLY SAMPLING CHRONOLOGY
HUNTER AAF
SAVANNAH GEORGIA

FIELD SAMPLE ID	SITE ID	RES CODE	MATRIX	SAMPLE DATE	SAMPLE TIME	DATE LAB RECEIVED	ANALYSES VOC/8020	PAH/8310	GRO/8015M	DRO/8100M	COMMENTS QA/QC SAMPLE TYPES
GROUNDWATER											
728-EB01	728MW01	BR11	WATER	7/29/98	1410	7/30/98	X	X			EQUIPMENT BLANK
728-MW0102	728MW01	PP01	WATER	7/29/98	1415	7/30/98	X	X			
728-MW0602	728MW06	PP01	WATER	7/29/98	1455	7/30/98	X	X			
728-MW0602MS/	728MW06	SL11	WATER	7/29/98	1455	7/30/98	X	X			MS
MSD	728MW06	DL11	WATER	7/29/98	1455	7/30/98	X	X			MSD
728-MW1102	728MW11	PP01	WATER	7/29/98	1635	7/30/98	X	X			
728-MW8002	728MW11	PD11	WATER	7/29/98	1635	7/30/98	X	X			DUPLICATE
728-MW6002	728MW60	PP01	WATER	7/29/98	1600	7/30/98	X	X			
728-MW6102	728MW61	PP01	WATER	7/29/98	1600	7/30/98	X	X			
728-MW6302	728MW63	PP01	WATER	7/29/98	1630	7/30/98	X	X			
728-MW6302	728MW63	PS11	WATER	7/29/98	1630	7/30/98	X	X			SPLIT
728-MW6402	728MW64	PP01	WATER	7/29/98	1530	7/30/98	X	X			
728-MW6502	728MW65	PP01	WATER	7/29/98	1725	7/30/98	X	X			
SURFACEWATER SEDIMENT											
728-SW0102	728SWE01	PP01	WATER	7/30/98	0810	7/30/98	X	X			
728-SW1002	728SWE01	PD11	WATER	7/30/98	0810	7/30/98	X	X			DUPLICATE
728-SE0102	728SWE01	PP01	SEDIMENT	7/30/98	0810	7/30/98	X	X	X	X	
728-SW0302	728SWE03	PP01	WATER	7/30/98	0900	7/30/98	X	X			
728-SW0302	728SWE03	PS11	WATER	7/30/98	0900	7/31/98	X	X			SPLIT
728-SE0302	728SWE03	PP01	SEDIMENT	7/30/98	0920	7/30/98	X	X	X	X	
728-SE0302MS/	728SWE03	SL11	SEDIMENT	7/30/98	0920	7/30/98	X	X	X	X	MS
MSD	728SWE03	DL11	SEDIMENT	7/30/98	0920	7/30/98	X	X	X	X	MSD
728-SE1002	728SWE03	PD11	SEDIMENT	7/30/98	0920	7/30/98	X	X	X	X	DUPLICATE
728-SE0302	728SWE03	PS11	SEDIMENT	7/30/98	0920	7/31/98	X	X	X	X	SPLIT

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

WO# 97829

PROJECT NAME: Hunter AAF LTM

TASK ORDER NO. CV03

PROJECT NO: 021974-4103

SAMPLE EVENT: Qtr. Sampling

LABORATORY ID: ASI

PROGRAM TYPE:

SAMPLER(S) NAME: G. Rowell / D. Wilderman

SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.										8020								
7-29-98	0805	W	710-TB02	710-SMW01	BT11	(8/3/8/3)	3	Y		✓				-5				
	0810	W	710-SMW0111	710-SMW01	PP01		3	Y		✓				-6				
	1200	W	710-MW0411	710-MW04	PP01		3	Y		✓				-7				
	1215	W	710-MW0311	710-MW03	PP01		3	Y		✓				-8				
	1215	W	710-MW2211	710-MW03	PD01		3	Y		✓				-9				
	1225	W	710-MW0111	710-MW01	PP01		3	Y		✓				-10				
	1240	W	710-MW0211	710-MW02	PP01		3	Y		✓				-11				
	1410	W	~~728-MW~~ 718-EB01	718-MW01	BR11	(8/3/98)	3	Y		✓				-12				
	1415	W	~~728~~-MW0102	~~728~~-MW01	PP01		3	Y		✓				-13				
*	1455	W	728-MW0602	728-MW06	PP01/SL11	(8/3/98)	9	Y		✓				-14/-15MS/-16MSD				
	1530	W	728-MW6402	728-MW64	PP01		3	Y		✓				-17				
↓	1600	W	728-MW6002	728-MW60	PP01		3	Y		✓				-18				

Relinquished by: (Signature) G. Rowell

Date/Time: 7-30-98/1615

Received by: Danielle Hudson

Date/Time: 7/30/98 1615

Cooler Temperature: 5

Remarks: * MS/MSD in CO, no seal, temp = 5°, pH = n/a 123 Cnt

Send Results to: Cooler #2

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. ~~FedEx~~ Cd

TRACKING NO:

STANDARD PRESERVATION (Y):
(H) HCl/VOC, [circled]
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER ______

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger — FAX # (404) 872-3161

SUBCONTRACTOR ASI — PROJECT # Hunter LTM

SAMPLE CUSTODIAN [signature] — TODAY'S DATE 7/30/98

DATE/TIME SAMPLES RECEIVED 7/30/98 16:15

AIRBILL NUMBER n/a — NO. OF COOLERS IN SHIPMENT 5

COOLER OPENED: DATE 7/30/98 TIME 16:15

CHAIN OF CUSTODY SEAL INTACT?	YES ☐	NO ☒
CHAIN OF CUSTODY PROVIDED?	YES ☒	NO ☐
SAMPLE LABELS PRESENT?	YES ☒	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☒	NO ☐

TYPE OF COLLANT USED ice

COOLANT CONDITION: MELTED ____ PARTIALLY MELTED/FROZEN ____

FROZEN ✓

COOLER NUMBER #	1459	TEMP INSIDE COOLER 5°
#		
#		
#		
#		
#		

RECORD TEMPERATURE BLANK (1) n/a (2) ____ (3) ____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

n/a

LIST SAMPLE ID'S IN EACH SHIPMENT: 710 - TB02, 710 - SMW011, - MW041, 710-MW031, 710 - MW221, - MW011, - MW021, 710 - 728 - EB01 - MW0102, -MW602 - MW604, -MW602, 728 - MW602 - MW630Z, - MW1102 - MW800Z, - MW650Z, 728 - SW1002, - SW0102, - SW0302

CHAIN - OF - CUSTODY - RECORD

WO# 97829

PROJECT NAME: HAAF LTM

PROJECT NO: 021974-4103

LABORATORY ID: ASI

SAMPLER(S) NAME: G. Rowell / D. Wilderman

TASK ORDER NO. CV03

SAMPLE EVENT: Qtr. Sampling

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: G. Rowell

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.											8310							
7-29-98	0810	W	710-SMW01/1	~~X~~ 710-SMW01	PP01		2	N			✓			-27				
	1200	W	710-MW04/1	710-MW04	PP01		2	N			✓			-28				
	1215	W	710-MW03/1	710-MW03	PP01		2	N			✓			-29				
	1215	W	710-MW82/1	710-MW03	PD01		2	N			✓			-30				
	1225	W	710-MW01/1	710-MW01	PP01		2	N			✓			-31				
	1240	W	710-MW02/1	710-MW02	PP01		2	N			✓			-32				
↓	1410	W	728-EB01	728-MW01	~~BT1~~ BR11		2	N			✓			-33				

Relinquished by: (Signature) D. Rowell — Date/Time: 7-30-98/1615

Received by: [signature] — Date/Time: 7/30/98 1615

Cooler Temperature: 3°

Remarks: Coolers #3 iQ NO Seal Temp = 3°C pH = N/a 123 cont

AIRBILL CO. ~~FedEx~~ CR

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger FAX # (404) 872-3161

SUBCONTRACTOR ASI PROJECT # Hunter LTM

SAMPLE CUSTODIAN [signature] TODAY'S DATE 7/30/98

DATE/TIME SAMPLES RECEIVED 7/30/98 16:15

AIRBILL NUMBER n/a NO. OF COOLERS IN SHIPMENT 5

COOLER OPENED: DATE 7/30/98 TIME 16:15

CHAIN OF CUSTODY SEAL INTACT? YES [ ] NO [X]

CHAIN OF CUSTODY PROVIDED? YES [X] NO [ ]

SAMPLE LABELS PRESENT? YES [X] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [X] NO [ ]

TYPE OF COLLANT USED ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN _____

FROZEN ✓

COOLER NUMBER #	1456	TEMP INSIDE COOLER	3°
#			
#			
#			
#			

RECORD TEMPERATURE BLANK (1) n/a (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

n/a.

LIST SAMPLE ID'S IN EACH SHIPMENT: 710 - SMW0111 - MW0411 - MW036
710 - MW221, - MW0111, - MW0211, 728 - FB01

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

WO #97829

PROJECT NAME: HAAF - LTM

PROJECT NO: 021974-4103

LABORATORY ID: ASI

SAMPLER(S) NAME: G. Rowell / D. Wilderman

TASK ORDER NO. CV03

SAMPLE EVENT: Qtr. Sampling

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.											8310							
7-29-98	1415	W	728-MW0102	728-MW01	PP01		2	N			✓			-34				
← 7-29-98	1455	W	728-MW0602	728-MW06	PP01		6	N			✓			-35	-36MS		-37MSD	
7-29-98	1530	W	728-MW6402	728-MW64	PP01		2	N			✓			-38				
↓	1600	W	728-MW6002	728-MW60	PP01		2	N			✓			-39				
↓	1600	W	728-MW6102	728-MW61	PP01		2	N			✓			-40				

Relinquished by: (Signature) G. Rowell

Date/Time: 7-30-98/1615

Received by: [illegible signature]

Date/Time: 7/30/98 1615

Cooler Temperature: 5

Remarks: * MS/MSD #4 in, NR, Temp 5° pH=NA 123 cnt

Send Results to: Cooler #4

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. FedEX

TRACKING NO:

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT

METCALF & EDDY Representative C. Hettinger FAX # (404) 872-3161

SUBCONTRACTOR ASI PROJECT # Hunter LTM

SAMPLE CUSTODIAN Danielle Hudson TODAY'S DATE 7/30/98

DATE/TIME SAMPLES RECEIVED 7/30/98 16:15

AIRBILL NUMBER n/a NO. OF COOLERS IN SHIPMENT 5

COOLER OPENED: DATE 7/30/98 TIME 16:55

CHAIN OF CUSTODY SEAL INTACT?	YES ☐	NO ☒
CHAIN OF CUSTODY PROVIDED?	YES ☒	NO ☐
SAMPLE LABELS PRESENT?	YES ☒	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☒	NO ☐

TYPE OF COLLANT USED ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN _____

FROZEN ✓

COOLER NUMBER		TEMP INSIDE COOLER
#	1458	5°
#		
#		
#		
#		

RECORD TEMPERATURE BLANK (1) n/a (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

n/a

LIST SAMPLE ID'S IN EACH SHIPMENT: 728-MW0102, -MW0602, 728-MW6402, -MW6002, -MW6102

CHAIN - OF - CUSTODY - RECORD

WO#97829

PROJECT NAME: Hunter LTM
TASK ORDER NO. CV03
PROJECT NO: 021974-4103
SAMPLE EVENT: Qtr. Sampling
LABORATORY ID: ASI
PROGRAM TYPE:
SAMPLER(S) NAME: G. Rowell / D. Wilbermann
SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
7-29-98	1630	W	728-MW6302	728-MW63	PP01		2	N	
	1635	W	728-MW1102	728-MW11	PP01		2	N	
	1635	W	728-MW8002	728-MW11	PD11		2	N	
	1725	W	728-MW6502	728-MW65	PP01		2	N	

ANALYTICAL PARAMETERS / METHODS

Method No.	VOCS	SVOC	METALS ICP / Hg CVAA / GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
		8310							
		✓					-	1	
		✓					-	2	
		✓					-	3	
		✓					-	4	

Relinquished by: (Signature) G. Rowell
Date/Time: 7-30-98 / 1615
Received by:
Date/Time: 7/30/98 1615

Cooler Temperature: 5°

Remarks: no, no head, temp = 5° pH = 1/2 123 cut

Send Results to: Cooler 1

AIRBILL CO. ~~FEDEX~~ 7/30 Hand

TRACKING NO:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____
STORED/SHIPPED IN ICE Y/N

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

WO#97829

PROJECT NAME: HAAF - LTM

TASK ORDER NO. CV03

PROJECT NO: 021974-4103

SAMPLE EVENT: Qtr. Sampling

LABORATORY ID: ASI

PROGRAM TYPE:

SAMPLER(S) NAME: D. Rowell / D. Wilderman

SAMPLER(S) SIGNATURE: D. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F)FIELD
7-29-98	1600	W	728-MW6102	728-MW61 (GR)	PP01		3	Y	
"	1630	W	728-MW6302	728-MW63	PP01		3	Y	
"	1635	W	728-MW (GR) 1102	728-MW11	PP01		3	Y	
"	1635	W	728-MW8002	728-MW11	PD11		3	Y	
"	1725	W	728-MW6502	728-MW65	PP01		3	Y	
7.30.98	0810	W	728-SW1002	728 SW01	PD11		3	Y	
7.30.98	0810	W	728-SW0102	728SW01	PP01		3	Y	
↓	0900	W	728-SW0302	728-SW03	PP01		3	Y	

ANALYTICAL PARAMETERS/METHODS

Method No.	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
8020									
✓				-19					
✓				-20					
✓				-21					
✓				-22					
✓				-23					
✓				-24					
✓				-25					
✓				-26					

Relinquished by: (Signature) D. Rowell

Date/Time: 7-30-98/1615

Received by:

Date/Time: 7/30/98 1615

Cooler Temperature: 5°

Remarks: ice, not dead, temp = 5°, pH = n/a 123 cont

Send Results to: Cooler #2

AIRBILL CO. ~~Fedex~~ (GR)

TRACKING NO:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/ ED IN ICE Y/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger FAX # (404) 872-3161

SUBCONTRACTOR ASI PROJECT # Hunter LTM

SAMPLE CUSTODIAN Danielle Hudson TODAY'S DATE 7/30/98

DATE/TIME SAMPLES RECEIVED 7/30/98 16:15

AIRBILL NUMBER n/a NO. OF COOLERS IN SHIPMENT 5

COOLER OPENED: DATE 7/30/98 TIME 16:15

CHAIN OF CUSTODY SEAL INTACT? YES ☐ NO ☒

CHAIN OF CUSTODY PROVIDED? YES ☒ NO ☐

SAMPLE LABELS PRESENT? YES ☒ NO ☐

BOTTLE LABELS CORRESPOND W/COC? YES ☒ NO ☐

TYPE OF COLLANT USED ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN _____

FROZEN ✓

COOLER NUMBER # 1469 TEMP INSIDE COOLER 5°

_____

_____

_____

_____

RECORD TEMPERATURE BLANK (1) n/a (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: 728 - MW6302, - MW 1102, 728 - MW8002, - MW6502

M&E Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

WO#97829

PROJECT NAME: Hunter Army Airfield LTM   TASK ORDER NO. CU03

PROJECT NO: 021974.4103   SAMPLE EVENT: Quarterly Sampling

LABORATORY ID: PROGRAM TYPE:

SAMPLER(S) NAME: D. Howard / G. Rowell   SAMPLER(S) SIGNATURE: Daniel Howard / G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.										~~8021B~~ 8260B (8/3)	8310					~~8100~~ 8015B 8/3	8015M	
7.30.98	0810	W	728SW1002	728SW01	PP11		2	N			✓		-41					
7.30.98	0810	W	728SW0102	728SW01	PP01		2	↓			✓		-42					
↓	0900	W	728SW0302	728SW03	PP01		2	↓			✓		-43					
↓	0920	~~WS~~ (GA)	728 ~~S~~E 0302 (GA)	728 ~~S~~E 03 (GA)	PP01		5	↓		✓	✓		-44			✓	✓	
↓	0920	S	728-SE1002	728-SE03	PD11		5	↓		✓	✓		-45			✓	✓	
✓	0920	S	728-SE0302	728-SE03	SL1 (SB83)		5	✓		✓	✓		-46-MS			✓	✓	
													-47 MSD ~~-48 MSD~~			7181		
													8100 8/3					

* (beside last sample row)

Relinquished by: (Signature) G. Rowell   Date/Time: 7-30-98/1615   Received by: [signature]   Date/Time: 7/30/98 1615   Cooler Temperature: 7°

Remarks: * MS/MSD   Cooler #5   ice No Seal Temp 7°   pH=N/a   123cw

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER ____

STORED/SHIPPED IN ICE (Y)/N

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. N/A

TRACKING NO:

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger
FAX # (404) 872-3161
SUBCONTRACTOR ASI
PROJECT # Hunter LTM
SAMPLE CUSTODIAN Danielle Hudson
TODAY'S DATE 7/30/98
DATE/TIME SAMPLES RECEIVED 7/30/98 16:15
AIRBILL NUMBER n/a
NO. OF COOLERS IN SHIPMENT 5
COOLER OPENED: DATE 7/30/98 TIME 16:15

CHAIN OF CUSTODY SEAL INTACT?	YES ☐	NO ☒
CHAIN OF CUSTODY PROVIDED?	YES ☒	NO ☐
SAMPLE LABELS PRESENT?	YES ☒	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☒	NO ☐

TYPE OF COLLANT USED ice
COOLANT CONDITION: MELTED ____ PARTIALLY MELTED/FROZEN ____
FROZEN ✓

COOLER NUMBER	TEMP INSIDE COOLER
# 1470 (7/30) · 1464	8° 7° (8/3)
#	
#	
#	
#	

RECORD TEMPERATURE BLANK (1) n/a (2) ____ (3) ____
CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)
IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED
n/a

LIST SAMPLE ID'S IN EACH SHIPMENT: 728-SW1002, 728-SW0102, 728-SW0302, 728-SE0302, 728-SE1002, 728-SE0302

DATA QUALITY SUMMARY REPORT

Hunter Army Airfield - Long Term Monitoring
Former Building 728
September 29, 1998

1.0 INTRODUCTION

Metcalf & Eddy , Inc. was contracted by the United States Army Corps of Engineers, Savannah District, to perform quarterly groundwater monitoring at building 728 at the former Hunter Army Airfield. This event represents the long term monitoring analytical data for July 1998.

Metcalf & Eddy, Inc. contracted with Savannah Laboratories to perform the required analyses of groundwater and sediment samples. The analytical data received was validated according to USEPA National Functional Guidelines for Organics Data Review and Inorganics Analysis. This guidance follows the Quality Assurance (QA)/Quality Control (QC) requirements outlined in the USEPA's Test Methods for Evaluating Solid Waste (EPA SW-846). Overall these guidelines mimic the most current editions of the EPA's Functional Guidelines for Reviewing Organic and Inorganic Analyses conducted outside the EPA's Contract Laboratory Program (CLP).

The following sections of this Data Quality Summary Report discuss the laboratory reporting, data validation, problems encountered and corrective actions as applied to the samples and data collected during this determination.

1.1 Field Samples and Analysis

The following report summarizes the validation findings of the samples included in the Sample Data Groups listed below.

SDG	*Date*	*Matrix*	*Samples*	*Field Duplicates*	*Trip Blanks*	*Equipment Blanks*
97829	07/29/98	WATER	10	2	1	1
97829	07/29/98	SEDIMENT	2	1	0	0

Eight groundwater samples, two surface water samples, two sediment samples, three field duplicates one equipment blank and one trip blank were analyzed. Water samples were analyzed by EPA 8020 and EPA 8310. Sediment samples were analyzed by EPA 8020, EPA 8100, DRO and GRO. Samples were analyzed by Analytical Services Inc.(ASI), Norcross,, Georgia using the following USEPA SW-846 Methods:

8020	Volatile Aromatics
8310	Polynuclear Aromatic Hydrocarbons
8015M	Gasoline Range Organics (GRO)
8100M	Diesel Range Organics (DRO)

2.0 LABORATORY REPORTING

2.1 Laboratory Blanks

Laboratory blanks or method blanks are artificial samples prepared from the same matrix type as the samples to be analyzed. These blanks are taken through sample preparation and analyzed before the field samples to determine if the glassware, sample preparation or laboratory environment has contaminated the field samples.

Laboratory blanks for all methods of analysis of groundwater, surface water and sediments were analyzed at the required frequency and were free of contaminants.

2.2 Laboratory Control Samples (% Recovery)

Laboratory control samples are artificial samples prepared from the same matrix type as the samples to be analyzed. These samples are processed through sample preparation and analyzed to assess the performance of each analytical system that the laboratory used to analyze the field samples.

Laboratory control samples for all methods of analysis of groundwater, surface water and sediments were analyzed at the required frequency and were within the required control limits.

2.3 Precision (% RPD)

Laboratory precision is evaluated by calculating the relative percent difference (RPD) between the values reported for a matrix spiked (MS) sample and its duplicate, the matrix spiked duplicate (MSD), or any other set of duplicate parameters. The following equation is utilized for this calculation:

$$\mathbf{RPD} = \frac{|Vs - Vd|}{[Vs + Vd] / 2} \mathbf{X\ 100}$$

Where *Vs* is the value reported for the matrix spiked (MS) sample and *Vd* is the value reported for it's duplicate (MSD). Sample RPDs are compared to the analyzing laboratory's precision control limits which are primarily derived from their in-house quality control data.

RPDs for all methods of analysis of spiked samples were within required control limits with the exception of one matrix spiked groundwater sample 728MW06, which exhibited slightly high RPDs for all PAH compounds. No qualifiers were required.

RPDs of field duplicates for all methods of analysis of groundwater and surface water were within established control limits with the exception one sample for PAH compounds. RPDs of field duplicates for all methods of analysis of sediments were within established control limits with the exception of one sample for DRO analysis. No qualifiers were required.

2.4 Surrogate Recovery

Surrogates are compounds similar to analytes of interest but are not normally found in environmental samples. Prior to sample preparation and analysis, surrogates are spiked into laboratory control samples, calibration and check standards, matrix spiked samples and field samples. Accuracy is measured by calculating percent recoveries for each surrogate as follows:

$$\%R = \frac{\text{Concentration of spike found}}{\text{Concentration of spike added}} \times 100$$

Surrogate recoveries for groundwater, surface water and sediments were within the required control limits.

2.5 Holding Time

Holding time is the storage time allowed between sample collection and sample analysis when the designated preservation and storage techniques are employed.

All groundwater surface water and sediment samples were analyzed within required holding times for all methods of analysis.

2.6 Temperature

Chain of custody forms and cooler receipts document that the laboratory received all samples at temperatures ranging from 3 °C to 7 °C. These temperatures are within the acceptable limits of the required preservation requirement of 4 °C plus or minus 2 °C.

2.7 Completeness

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of > 99% completeness.

3.0 DATA VALIDATION

The objective when evaluating the quality of chemical data is to determine its usability. The evaluation is based upon the interpretation of the laboratory QC data, the field QC data, and the project Data Quality Objectives (DQOs). The evaluation process is often termed "data validation".

3.1 Laboratory Data Validation

Laboratory data were evaluated to assess , holding times, laboratory blanks, laboratory control samples, surrogate recoveries, and matrix spike/matrix spike duplicate (MS/MSD) relative percent differences (RPDs). These criteria were used to evaluate the bias and precision of the data generated by the laboratory. The bias of the laboratory data was assessed through consideration of the following:

- Adherence to the prescribed method
- Recovery of MS/MSD from field samples
- Method blank contamination
- Adherence to sample preparation and holding times
- Recovery of surrogate spikes
- Field duplicate precision

3.2 Definition of Data Qualifiers

During the data validation process, all laboratory data had to be evaluated and assigned a data qualifier, as applicable. These qualifiers are defined in the February 1994 EPA document titled, "National Functional Guidelines for Organic Data Review." The guidance also describes procedures to be followed when qualifying data. The data qualifiers are defined as follows:

U = the compound was analyzed for, but was not detected above the level of the associated value
J = the associated value is an estimated quantity. The reported result is qualitatively accurate but quantitatively imprecise.
UJ = the compound was analyzed for, but was not detected, and the associated value is an estimated value due to a variance from quality control limits.
R = the reported result or quantitation limit is rejected and unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte can not be verified

Data qualifier flags were not assigned to data that were totally in compliance with Quality Control requirements.

For organic data, specifically VOCs, the positive and undetected (U) results were qualified as estimated (J/UJ) if one surrogate compound was detected outside acceptable recovery limits and/or the recovery was greater than 10 percent. If the recoveries of one surrogate compound were less than 10 percent, then the positive results were qualified as estimated (J) and the undetected results were rejected (R). Results of PAH compounds are validated in the same manner as VOC, the qualifiers are applied to results with one or more surrogate compounds detected outside the acceptable recovery limits.

3.3 Qualified Results

Groundwater and Surface water:

Volatile Aromatics - No qualifiers were required.
Polynuclear Aromatic Hydrocarbons - No qualifiers were required.

Sediments:

Volatile Aromatics - No qualifiers were required.
Polynuclear Aromatic Hydrocarbons - No qualifiers were required.
Total Petroleum Hydrocarbons; DRO and GRO - No qualifiers were required.

4.0 PROBLEMS ENCOUNTERED

Any problems encountered during sample analysis for this investigation are described in detail below. Analytical data that did not meet the QC requirements were qualified as stated in **Section 3.3**.

4.1 Holding Times

No problems were present regarding hold times.

4.2 Surrogate Recovery

No problems were encountered.

4.3 Precision (% RPD)

All PAH compounds for the spiked groundwater sample 728MW06 were outside the established RPDs for the duplicate groundwater sample. DRO analysis for the sediment sample 728SWE03 were outside the established RPDs for field duplicates. No qualifiers were required.

4.4 Field Duplicates

In addition to the matrix spike sample, field duplicates were collected to assess sampling precision. Two duplicate samples were collected which represents a frequency of approximately 10%, one for every ten field samples (rounded up), per matrix, per site, per sampling event. Field duplicates were within quality control RPD limits for 95% of the parameters analyzed. Sample duplicate precision is indicative that these data are comparable and representative of field conditions.

4.5 Equipment Rinsates

One equipment rinsate was sampled during this investigation and was free of contamination.

4.6 Laboratory Blanks

Laboratory blanks for all methods of analysis of groundwater, surface water and sediment were analyzed at the required frequency and were free of contaminants.

4.7 Laboratory Control Standards

Laboratory control standards were within the specified method criteria and the sample results required no qualifications.

5.0 SUMMARY OF DATA QUALITY

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness. The results of the data validation indicate the quality of the data is within QC limits and is acceptable to verify or deny any contamination present in the groundwater, surface water or sediments at this site.

Reviewed by: Christi Altheyer

Date: 10/6/98

hunter1\chem\reports\728-98.ltm

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D. Wilderman

WELL ID: 728-MW01

PROJECT NAME: HAAF 1st Qtr Sampling

LOCATION: B.728

Date sampled: 7-29-98 Time start _____ End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 3.2. ft

3. Depth of well from T.O.C. 13.20 ft

4. Feet of standing water (h) 10.00 ft

1. Standing water (gal.) = 1.7

2. X 3 well volumes

3. = 5.1 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:

Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14 [(0.17 \text{ ft.})^2 \div 4] (10.00 \text{ ft.}) \times 7.48 \text{ gal / ft.}^3 = 1.7 \text{ gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume = 1.7	gal.	4.5	207	27.7
2.Well volume = 3.4	gal.	4.5	205	26.1
3.Well volume = 5.1	gal.	4.4	205	25.4
4.Well volume = _____	gal.			
5.Well volume = _____	gal.			
Ground water sample _____				

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 2 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D. Wilderman WELL ID: 728-MW06

PROJECT NAME: HAAF 1st Qtr Sampling LOCATION: B. 728

Date sampled: 7-29-98 Time start ____ End ____ Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 5.39 ft
3. Depth of well from T.O.C. 12.90 ft
4. Feet of standing water (h) 7.51 ft

1. Standing water (gal.) = 1.3
2. X 3 well volumes
3. = 3.9 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14 [(0.17 \text{ ft.})^2 \div 4] (7.51 \text{ ft.}) \times 7.48 \text{ gal / ft.}^3 = 1.3$ gal

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.3 gal.	4.5	741	28.1
2.Well volume =	2.6 gal.	4.6	840	25.8
3.Well volume =	3.9 gal.	4.7	855	25.2
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation - ____

Sample Description ____

Odor: ____

Color: ____

Appearance: ____

Weather Conditions: ____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: >1000 ppm

COMMENTS: ____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D. Wilderman

WELL ID: 728-MW11

PROJECT NAME: HAAF 1st Qtr Sampling

LOCATION: B.728

Date sampled: 7-29-98 Time start _____ End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 6.12 ft

3. Depth of well from T.O.C. 12.30 ft

4. Feet of standing water (h) 6.18 ft

1. Standing water (gal.) = 1.1

2. X 3 well volumes

3. = 3.3 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.18 \text{ ft.}) \times 7.48 \text{ gal / ft.}^3 =$ _____ gal

		pH	Conductivity	Temperature, (F)
1.Well volume = 1.1 gal.		3.6	84	25.7
2.Well volume = 2.2 gal.	*	4.9	74	26.3
3.Well volume = 33 gal.		5.1	67	25.1
4.Well volume = _____ gal.				
5.Well volume = _____ gal.				
Ground water sample _____				

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: Ø ppm

In Well: Ø ppm

COMMENTS: * 2pt. recalibration

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D Wilderman

WELL ID: 728-mw60

PROJECT NAME: HAAF 1st Qtr Sampling

LOCATION: B.728

Date sampled: 7/29/98 Time start _____ End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 6.70 ft

3. Depth of well from T.O.C. 13.00 ft

4. Feet of standing water (h) 6.30 ft

1. Standing water (gal.) = 1.1

2. X 3 well volumes

3. = 3.3 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.30 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 =$ 1.1 gal

		pH	Conductivity	Temperature, (F)
1.Well volume = 1.1	gal.	3.7	357	25.3
2.Well volume = 2.2	gal.	38.	364	24.9
3.Well volume = 3.3	gal.	4.0	382	24.0
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: Ø ppm

In Well: >1000 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D Williamson WELL ID: 728-MW61

PROJECT NAME: HAAF 1st Qtr Sampling LOCATION: B.728

Date sampled: 7-29-98 Time start _____ End _____ Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.61 ft
3. Depth of well from T.O.C. 13.00 ft
4. Feet of standing water (h) 6.39 ft

1. Standing water (gal.) = 1.1
2. X 3 well volumes
3. = 3.3 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.39 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 =$ _____ gal

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.1 gal.	2.7	81	25.4
2. Well volume =	2.2 gal.	3.4	119	25.0
3. Well volume =	3.3 gal.	3.6	125	24.6
4. Well volume =	_____ gal.			
5. Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 20 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D Wildeman

WELL ID: 728-mw63

PROJECT NAME: HAAF 1st Qtr Sampling

LOCATION: B. 728

Date sampled: 7/29/98 Time start _____ End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 6.79 ft

3. Depth of well from T.O.C. 14.00 ft

4. Feet of standing water (h) 7.21 ft

1. Standing water (gal.) = 1.2

2. X 3 well volumes

3. = 3.4 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](7.21 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.2 \text{ gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.2 gal.	3.5	152	25.1
2.Well volume =	2.4 gal.	& 5.4	187	24.5
3.Well volume =	3.4 gal.	5.5	194	24.3
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: Ø ppm

In Well: Ø ppm

COMMENTS: 2 pt. recalibration

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

Metcalf & Eddy

SAMPLED BY: G. Powell D Wildeman WELL ID: 728 - MW64

PROJECT NAME: HAAF 1st Qtr Sampling LOCATION: B. 728

Date sampled: 7-29-98 Time start _____ End _____ Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 5.39 ft
3. Depth of well from T.O.C. 13.00 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.3
2. X 3 well volumes
3. = 3.9 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14 [(0.17 \text{ ft.})^2 \div 4] (7.61 \text{ ft.}) \times 7.48 \text{ gal / ft.}^3 = 1.3 \text{ gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.3 gal.	3.4	62	26
2. Well volume =	2.6 gal.	3.4	59.9	25.7
3. Well volume =	3.9 gal.	3.5	60.3	24.7
4. Well volume =	_____ gal.			
5. Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 2. ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell D. Wilderman WELL ID: 728-MW65

PROJECT NAME: HAAF 1st Qtr Sampling LOCATION: B.728

Date sampled: 7/20/98 Time start _____ End _____ Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.73 ft
3. Depth of well from T.O.C. 13.00 ft
4. Feet of standing water (h) 6.27 ft

1. Standing water (gal.) = 1.1
2. X 3 well volumes
3. = 3.3 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14 [(0.17 \text{ ft.})^2 \div 4] (6.27 \text{ ft.}) \times 7.48 \text{ gal / ft.}^3 =$ 1.1 gal

		pH	Conductivity	Temperature, (F)
1.Well volume = 1.1	gal.	5.7	187	25.1
2.Well volume = 2.2	gal.	5.9	183	25.3
3.Well volume = 3.3	gal.	5.8	188	24.8
4.Well volume = _____	gal.			
5.Well volume = _____	gal.			
Ground water sample _____				

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 0 ppm

COMMENTS: _____

SITE RANKING FORM

Facility Name: Former Building 728 **Ranked by:** D. Humphris
County: Chatham **Facility ID#:** 9025035 and 9025049 **Date Ranked:** 9/30/98

SOIL CONTAMINATION

A. Total PAHs -
Maximum Concentration found on the site (Assume <0.660 mg/kg if only gasoline was stored on site)

- ☐ ≤ 0.660 mg/kg = 0
- ☐ > 0.66 - 1 mg/kg = 10
- ☐ > 1 - 10 mg/kg = 25
- ■ > 10 mg/kg = 50

B. Total Benzene -
Maximum Concentration found on the site

- ☐ ≤ 0.005 mg/kg = 0
- ☐ > 0.005 - .05 mg/kg = 1
- ■ >.05- 1 mg/kg* = 10
- ☐ > 1-10 mg/kg = 25
- ☐ > 10 - 50 mg/kg = 40
- ☐ > 50 mg/kg = 50

C. Depth to Groundwater
(bls = below land surface)

- ☐ > 50' bls = 1
- ☐ > 25'-50' bls = 2
- ☐ > 10'-25' bls = 5
- ■ ≤10 bls = 10

Fill in the blanks: (A. 50) + (B. 10) = (60) x (C. 10) = (D. 600)

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See guidelines for definition of "sheen").

- ☐ No free product = 0
- ■ Sheen - 1/8"** = 250
- ☐ > 1/8" - 6" = 500
- ☐ > 6" - 1 ft = 1,000
- ☐ For every additional inch, add another 100 points = 1,000 +

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release)

- ☐ ≤ 5 ug/L = 0
- ☐ > 5 - 100 ug/L = 5
- ☐ > 100- 1,000 ug/L = 50
- ■ > 1,000-10,000 ug/L = 100
- ☐ > 10,000 ug/L = 250

Fill in the blanks: (E. 250) + (F. 100) = (G. 350)

*Two samples had detection levels <60 mg/kg due to dilutions.
**Free product recovery reduces product thickness to less than 1/8 inch.

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤ 500'	= 500
☐	> 500' - 1/4 mi	= 25
☐	> 1/4 mi - 1 mi	= 10
☐	> 1 mi - 2 mi	= 2
■	> 2 mi	= 0

For lower susceptibility areas only:

☐	> 1 mi	= 0

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤ 100'	= 500
☐	> 100' - 500'	= 25
☐	> 500' mi - 1/4 mi	= 5
☐	> 1/4 mi - 1/2 mi	= 2
■	> 1/2 mi	= 0

For lower susceptibility areas only:

☐	> 1/4	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULTS** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table.

■	Impacted	= 500
☐	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
☐	> 1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
■	> 1,000' or no free product	= 0

Fill in the blanks: =(H. 0) + (I. 0) + (J. 500) + (K. 0) = L. 500

(G. 350) x (L. 500) = M. 175,000

(M. 175,000) + (D. 600) = N. 175,600

P. SUSCEPTIBILITY AREA MULTIPLIER

☐ If site is located in a low Groundwater Pollution Susceptibility Area - 0.5

■ All other sites = 1

Q. EXPLOSION HAZARD

Have any explosion vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

■ No = 0

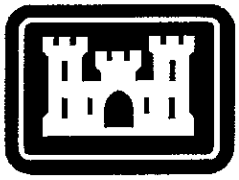
Fill in the blanks: (N. 175,600) x (P. 1) = (L. 175,600) + (Q. 0)

= 175,600

ENVIRONMENTAL SENSITIVITY SCORE

EXHIBIT B

SECOND QUARTERLY MONITORING ONLY REPORT



U.S. Army Corps
of Engineers

FINAL SECOND QUARTERLY MONITORING PROGRESS REPORT FORMER BUILDING 728 EPD FACILITY NO. 9025035 and 9025049

at

HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

under

Contract No. DACA01-96-D-0020
Delivery Order No. CV03

January 1999

Submitted to:

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH, GEORGIA

Prepared by:

METCALF & EDDY, INC.
ATLANTA, GEORGIA

FINAL SECOND QUARTERLY MONITORING PROGRESS REPORT
FORMER BUILDING 728
EPD FACILITY NO. 9025035 AND 9025049
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

TABLE OF CONTENTS

APPENDICES

II. PROJECT SUMMARY

(Appendix 1, Figure 1: Site Location Map)

Provide a brief description or explanation of the site and a brief chronology of environmental events leading up to this report.

The former Building 728 site consisted of twelve USTs and eight oil/ water separators associated with the former Northern Fuel Battery and four USTs located near the rail spur; south of the fuel battery. The former Building 728 site is located on the northwestern portion of Hunter Army Airfield (HAAF) as illustrated in **Appendix 1**, **Figure 1**. A plan view of the former Northern Fuel Battery area is provided on **Figure 2a** in **Appendix 1**. During the 1940s, the tanks held aviation fuel which was pumped via pipelines to fueling pits on the runway. Around 1957, the entire system was converted to store an alcohol/water mixture used as an aircraft de-icer. Later, some of the tanks near former Building 728 were used to store waste oil. The four USTs located directly adjacent to former Building 728 had a capacity of 12,000 gallons. These tanks held aviation fuel and appear to have been part of the fuel hydrant system.

UST removal activities in the former Building 728 area were completed by Anderson Columbia Environmental, Inc. (ACE) in June 1994. A total of 43,140 gallons of hazardous and non-hazardous waste water was disposed of by Industrial Water Services, Inc. A total of 25 tanks (12 JP-4/aviation gas USTs, 4 aviation gas USTs, 8 oil/water separators, 1 water control pit) were removed. During tank removal activities, 2623.91 tons of soil was removed and transported to Laidlaw Environmental Services for incineration. Soil and groundwater samples were collected below the tank excavations in accordance with Georgia EPD UST closure requirements. Contamination in soil and groundwater has been confirmed by the sampling and no free product was encountered during the removal activities.

Metcalf & Eddy completed an initial investigation of the former Building 728 area in September 1995. The findings of the subsurface investigation were summarized in the Final CAP-Part A submitted to the Georgia EPD UST Program in August 1996. A summary of the UST closure activities was also presented in the CAP-Part A. A follow up investigation of the former Building 728 site culminated in the submittal of a CAP-Part B which was submitted to the EPD in December 1997. Free product was detected in monitoring wells MW08, MW59, and MW62. Free product recovery is ongoing utilizing a skimmer at well MW08 and absorbent socks (changed monthly) at wells MW59 and MW62. Pending funding for a remediation system recommended in the CAP-Part B, the USACE elected to perform quarterly monitoring which may aid in the design of the remediation system. This report documents the second quarterly sampling and analytical results.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

Groundwater table elevations were measured in twenty monitoring wells on November 2, 1998 in order to determine the direction of groundwater flow. Eight monitoring wells (MW01, MW06, MW11, MW60, MW61, MW63, MW64, and MW65) were selected for sampling by the USACE. These monitoring wells were purged and sampled on November 2, 1998. All samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX - Method 8021) and polynuclear aromatic hydrocarbons (PAHs - Method 8310). Purge water was containerized in drums and stored at the PDO Yard until proper disposal is arranged. Surface water samples were collected from SWE-01 (upgradient) and SWE-03 (downgradient) with a sediment sample collected from SWE-03 since no sediment was observed at SWE-01. The surface water and sediment samples were collected on November 5, 1998. Surface water and sediment were analyzed for BTEX and PAHs as above with the additional sediment analyses of total petroleum hydrocarbons-diesel range organics (DRO) and gasoline range organics (GRO) (both Method 8015M)

A. Potentiometric Data:

*Tabulate all data and illustrate last 2 monitoring events findings in **Figures 2a and 2b.***
***(Appendix 1, Figure 2a** and **2b**: Potentiometric Surface Maps)*
***(Appendix 2, Table 1**: Groundwater Elevations)*

Discuss groundwater flow at this site and implications for this project.

Water levels were measured in twenty monitoring wells (the two deep wells were not measured) on November 2, 1998. **Table 1** in **Appendix 2** lists the wells and water level elevations. Compared to the first quarterly sampling measurements taken on July 29, 1998, water levels are an average of 0.44 feet lower. **Figures 2a** and **2b** show the potentiometric surface map generated from the water levels from the first and second quarter sampling, respectively. Groundwater flow is generally to the northwest with a gradient of approximately 0.006 ft/ft. No significant changes were observed in the potentiometric surface, flow direction, or gradient compared to the information presented in the first quarterly monitoring report.

B. Analytical Data:

*Tabulate all data for monitoring events findings in **Table 2**, illustrate last two events findings in **Figures 3a and 3b**, and graph the trend of contaminant concentration in **Figure 4**.*
***(Appendix 1, Figure 3a** and **3b**: Groundwater Quality Maps)*
***(Appendix 1, Figure 4**: Trend of Contaminant Concentrations)*
***(Appendix 2, Table 2**: Groundwater Analysis Results)*
***(Appendix 3**, Laboratory Analysis Results)*

Discuss groundwater analysis results, trend of contaminant concentrations, and implications for this project.

Well sampling began with the well located in the area suspected of least contamination. Protective gloves were worn during sampling and changed between samples. The sampling procedures used were identical to those used in previous sampling episodes (CAP-Part A and B). Samples were shipped via Federal Express overnight to Analytical Services, Inc. (ASI) located in Norcross, Georgia for BTEX and PAH analyses. Analytical results are summarized in **Table 2**.

The eight monitoring wells and the potable well (Hunter 1) were sampled on November 3, 1998 for BTEX (Method 8020) and PAHs (Method 8310). Analytical results confirm wells MW06, MW11, MW60, MW61, MW63, and MW64 remain impacted by petroleum hydrocarbons as identified in the previous sampling episodes. Minor decreases in benzene and total BTEX were observed in MW11 and MW64. Benzene also decreased in MW63 but total BTEX increased. Minor increases in benzene and total BTEX were observed in MW06, MW60, and MW61. No major changes in benzene or total BTEX concentrations were observed. No changes were observed at MW01 and MW65 where benzene and total BTEX are below detection limits. The benzene concentrations at MW60, MW61, MW63, and MW64 exceed the Georgia EPD In-Stream Water Quality Standard (IWQS) of 71.28 µg/L (**Table 2**). **Figure 4** lists the benzene concentrations for each quarter plus a graph of the benzene values over time. **Figures 3a** and **3b** show the concentrations of hydrocarbons in groundwater from the first and second quarterly monitoring periods, respectively.

PAHs were detected in every well sampled. The IWQS (0.0311 µg/L for individual compounds) was exceeded at MW01, MW06, MW60, and MW61 but not at MW11, MW63, MW64, MW65. The regulated PAHs that were exceeded are benzo(a)-anthracene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, and chrysene. No apparent distribution pattern is observed. The PAHs identified are indicative of a diesel source rather than gasoline.

The potable water supply well was also sampled for BTEX and PAHs. Benzo(b)-fluoranthene was detected at 0.041 µg/L; below the EPA Region 3 tap water standard of 0.092µg/L. Last quarter, only fluorene was detected so no clear pattern is emerging.

Surface water results indicate no IWQS exceedences of BTEX or PAH compounds (**Table 3**). Benzene was detected at 3.1 µg/L at SWE01 (upgradient) and at 0.68 µg/L at SWE03 (downgradient). **Figures 3a** and **3b** show the two surface water sampling locations and results.

Sediment was not observed at SWE01 and was therefore collected only from SWE03. The analytical results (**Table 4**) indicate no impact from BTEX compounds. Of the regulated PAHs detected, only benzo(b)fluoranthene exceeded its soil threshold level

(STL) of 0.660 mg/kg. The STLs are listed in Georgia Rule Chapter 391-3-15.09, Table B, less than 500 feet to surface water. DRO and GRO were detected at 0.017 and 0.0028 mg/kg, respectively (neither are regulated). All analytical data is presented in **Appendix 3**.

IV. SITE RANKING *(NOTE: RE-RANK SITE AFTER EACH MONITORING EVENT)*

***(Appendix 4:** Site ranking results)*

Environmental Site Sensitive Score: 55,600
The Site Ranking Form is presented in **Appendix 4**.

V. CONCLUSIONS/RECOMMENDATIONS

Provide justification of no-further-action-required recommendation or briefly discuss future monitoring plans for this site.

This completes the second quarter of monitoring at this site. No significant changes in the groundwater flow direction or gradient were observed. Soluble petroleum hydrocarbon constituents continue to impact six monitoring wells and PAHs impact eight wells. Free product recovery will continue in monitoring well MW08 via the belt skimmer and in wells MW59 and MW62 via absorbent socks. Continued monitoring will determine whether or not the plume is migrating downgradient.

VI. REIMBURSEMENT ATTACHED N/A

***(Appendix 5:** Reimbursement Application)*

Fort Stewart is a federal installation and is not eligible for funding through the GUST Trust Fund.

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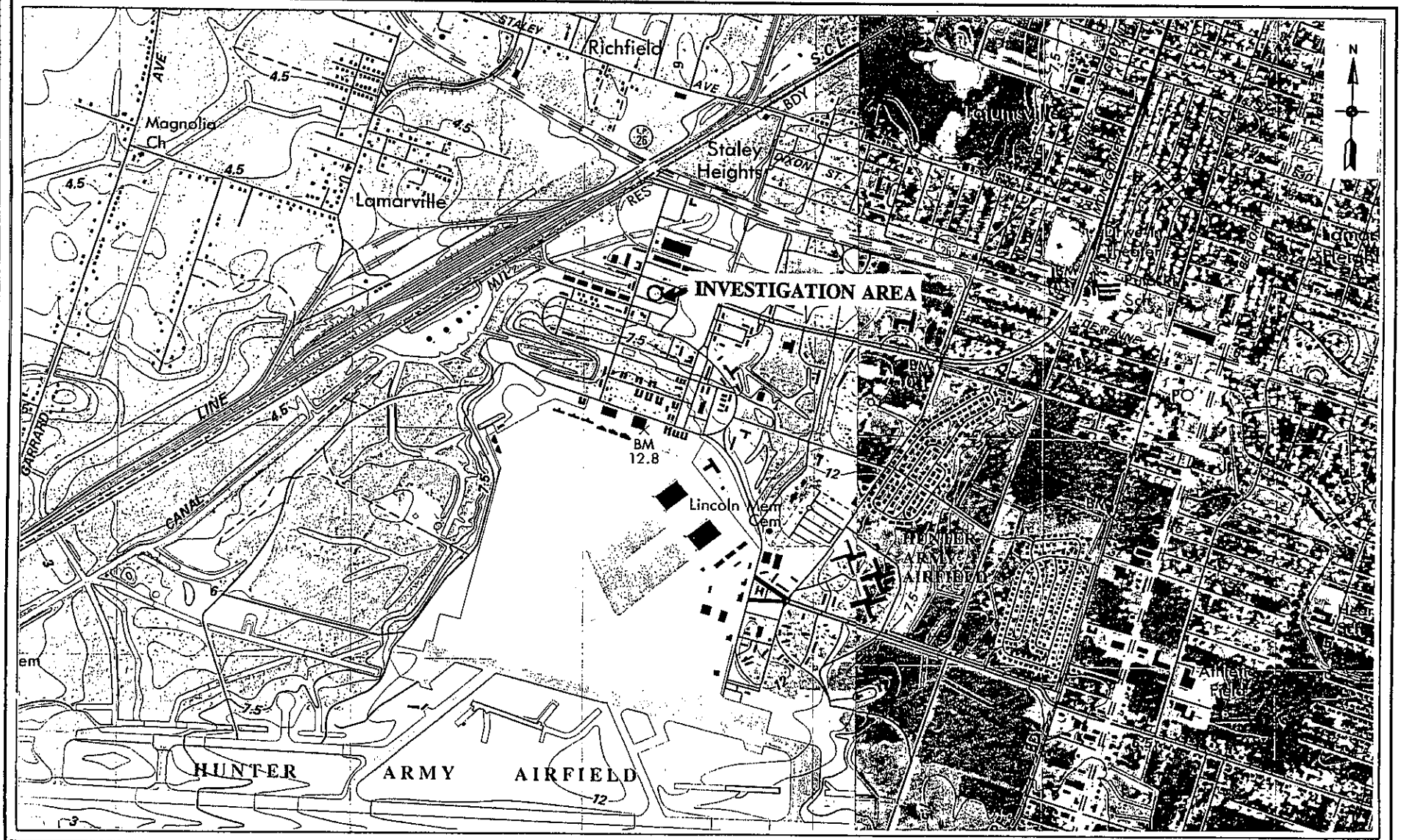

METCALF & EDDY

SCALE 1:24000

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

AIRFIELD LOCATION MAP
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

SOURCE: GARDEN CITY AND SAVANNAH, GA USGS QUADRANGLE MAPS, 1978

FIGURE 1

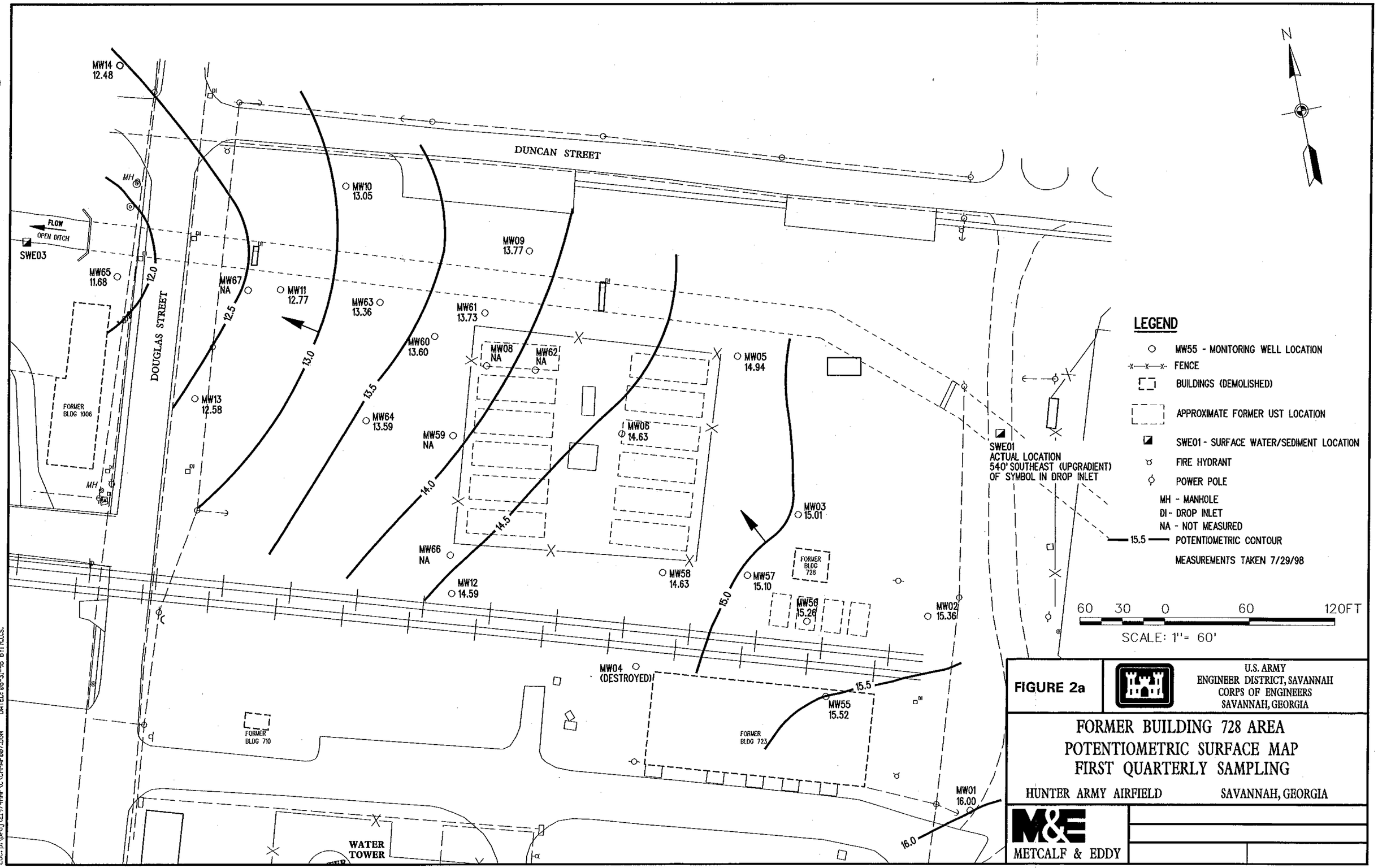

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FIGURE 2a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
POTENTIOMETRIC SURFACE MAP
FIRST QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

M&E
METCALF & EDDY

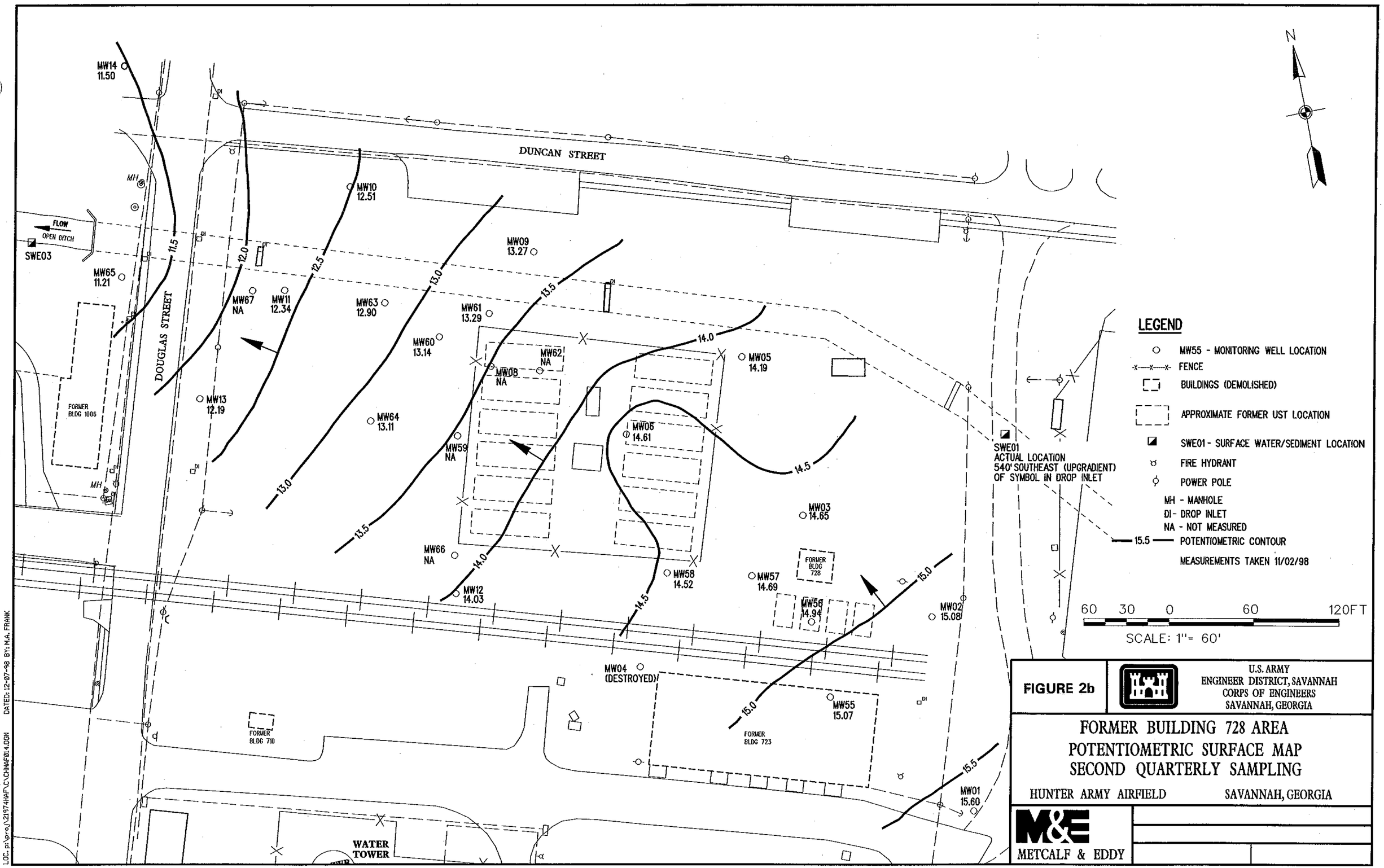


FIGURE 2b

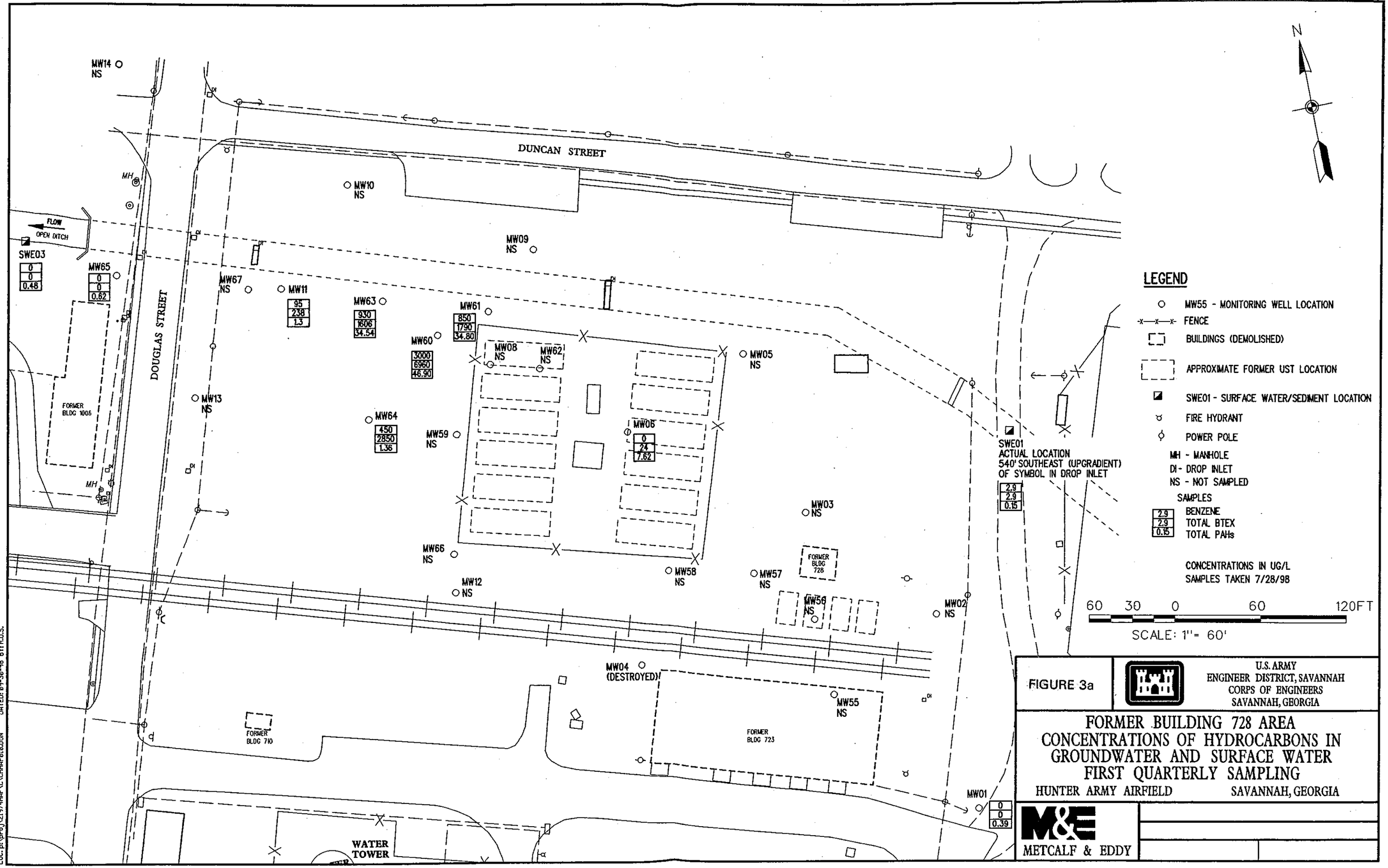
U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
POTENTIOMETRIC SURFACE MAP
SECOND QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

LOC: p:\proj\21974HAF\C\CHHAF014.DGN DATED: 12-07-98 BY: M.A. FRANK



LOC: p:\or=J\21974HAF\C\CHHAF010.DGN DATED: 09-30-98 BY: R.O.S.

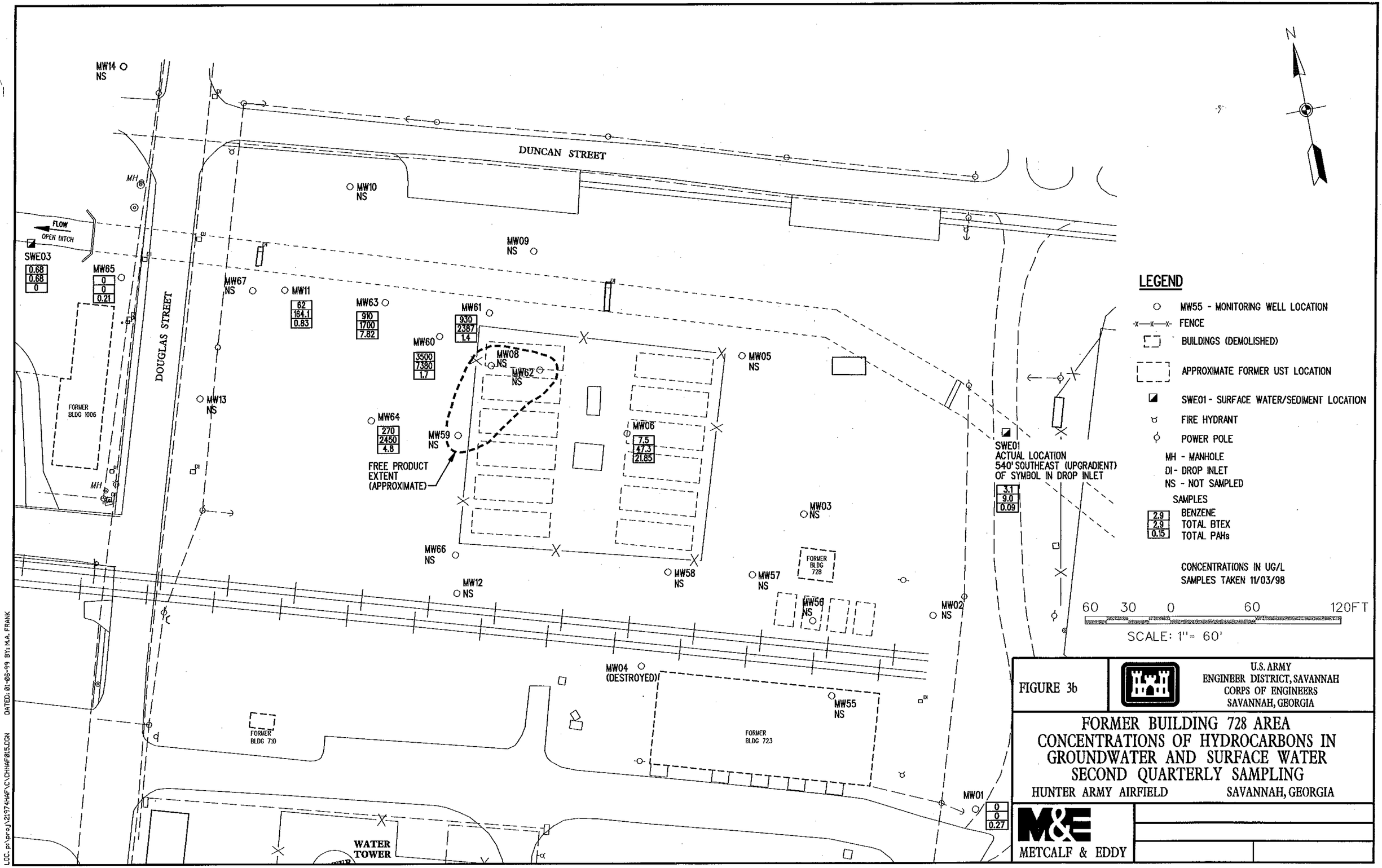
FIGURE 3a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA CONCENTRATIONS OF HYDROCARBONS IN GROUNDWATER AND SURFACE WATER FIRST QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY



LOC: p:\proj\21974HAF\C\CHHAF015.DGN DATED: 01-06-99 BY: M.A. FRANK

FIGURE 3b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA CONCENTRATIONS OF HYDROCARBONS IN GROUNDWATER AND SURFACE WATER SECOND QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

FIGURE 4

ANNUAL MONITORING SPREADSHEET (BENZENE) - SECOND QUARTER
FORMER BUILDING 728
HUNTER ARMY AIRFIELD

	BENZENE RESULTS (ug/L)								
WELL #	CAP-B	1'st QTR	2'nd QTR	3'rd QTR	4'th QTR	5'th QTR	6'th QTR	7'th QTR	8'th QTR
MW01	0	0	0						
MW02	0	NS	NS						
MW03	4.2	NS	NS						
MW05	0	NS	NS						
MW06	24	0	7.5						
MW09	0	NS	NS						
MW10	0	NS	NS						
MW11	1700	95	62						
MW12	56	NS	NS						
MW13	1.4	NS	NS						
MW14	0	NS	NS						
MW55	0	NS	NS						
MW56	17	NS	NS						
MW57	24	NS	NS						
MW58	41	NS	NS						
MW60	1400	3000	3500						
MW61	910	850	930						
MW63	2400	930	910						
MW64	81	450	270						
MW65	0	0	0						
SMW01	0	0	0						

NS - Not Sampled

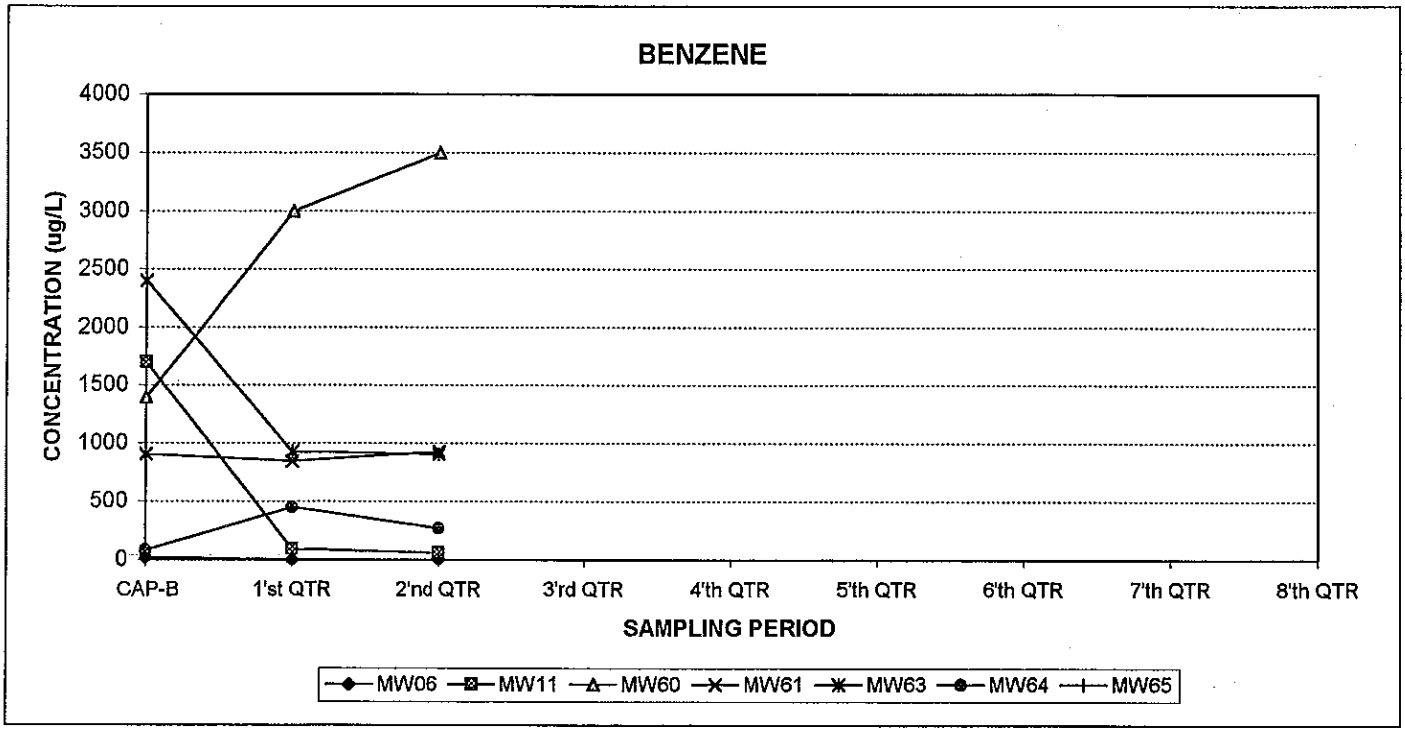


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TABLE 1: GROUNDWATER ELEVATIONS
Former Building 728
Hunter Army Airfield
Chatham County, Facility ID Nos. 9025035 and 9025049

Location	Screen Interval ft, bgs	Water Depth, TOC	TOC Elevation, ft, msl	Water Level Elevation, ft, msl	Surface Elevation, ft, msl	Free Prod. Thickness ft.
CAP-A						
MW01	3.2-13.2	3.60	19.20	15.60	19.5	
MW02	3.8-13.8	5.43	20.51	15.08	20.8	
MW03	2.6-12.6	6.15	20.80	14.65	21.1	
MW04	3.4-13.4	Destroyed	3/97			
MW05	3.3-13.3	6.18	20.37	14.19	20.7	
MW06	2.9-12.9	5.41	20.02	14.61	20.4	
MW08	3.5-13.5	Product	Recovery		19.6	0.85 (11/98)
MW09	3.1-13.1	7.00	20.27	13.27	20.5	
MW10	2.9-12.9	6.60	19.11	12.51	19.4	
MW11	2.3-12.3	6.55	18.89	12.34	19.3	
MW12	2.9-12.9	4.48	18.51	14.03	18.8	
MW13	4.0-14.0	6.20	18.39	12.19	18.7	
MW14	4.0-14.0	7.26	18.76	11.50	19.0	
CAP-B						
MW55	2.0-12.0	3.25	18.32	15.07	18.5	
MW56	1.4-11.4	4.75	19.69	14.94	19.8	
MW57	2.0-12.0	5.41	20.10	14.69	20.3	
MW58	2.0-12.0	4.69	19.21	14.52	19.4	
MW59	2.0-12.0	Product	Recovery	NA	19.4	0.15 (3/97)
MW60	3.0-13.0	7.16	20.30	13.14	20.4	
MW61	3.0-13.0	7.05	20.34	13.29	20.5	
MW62	3.0-13.0	Product	Recovery	NA	19.9	0.81 (3/97)
MW63	4.0-14.0	7.25	20.15	12.90	20.3	
MW64	3.0-13.0	5.87	18.98	13.11	19.1	
MW65	3.0-13.0	7.20	18.41	11.21	18.6	
MW66	35.6-40.6	NA	18.60	NA	18.8	
MW67	33.0-38.0	NA	18.82	NA	19.0	

bgs-below ground surface

TOC-top of casing

msl-mean sea level

Measurements on 11/02/98 except MW08 on 11/8/98

NA- not measured

(p:\hazwaste\hunt_llm\wellsum.xls)

TABLE 2 : GROUNDWATER ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
MW01	11/2/98	Primary	U	U	U	U	U	0.27
MW06	11/2/98	Primary	7.5	4.0	29	6.8	47	21.85
MW11	11/2/98	Primary	62	2.1	15	85	164	0.83
MW60	11/2/98	Primary	3500	270	710	2900	7380	1.70
MW60	11/2/98	Duplicate 1	3600	280	720	3000	7600	3.46
MW61	11/2/98	Primary	930	67	290	1100	2387	19.40
MW63	11/2/98	Primary	910	100	120	570	1700	9.89
MW64	11/2/98	Primary	270	510	170	1500	2450	4.80
MW65	11/2/98	Primary	U	U	U	U	U	0.21
SMW01(B710)	11/2/98	Primary	U	U	U	U	U	0.041
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
SW01	11/5/98	Primary	3.1	1.5	1.4	3.0	9.0	0.097
SW1002	11/5/98	Duplicate	2.9	1.3	1.2	2.7	8.1	U
SW03	11/5/98	Primary	0.68	U	U	U	0.68	U
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.

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TABLE 4 : SEDIMENT ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TOTAL BTEX (mg/kg)	TOTAL PAH (mg/kg)
SE03	11/5/98	Primary	U	U	U	U	U	4.930
SE10	11/5/98	Duplicate	U	U	U	U	U	8.260
ARARS		STL	0.017	115	18	700	-	-

U = Not Detected.
(-) = No STL listed (Table B, <500 ft to surface water).

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DATA QUALITY SUMMARY REPORT

Hunter Army Airfield - Long Term Monitoring
Former Buildings 133, 710, 728, 1310 & Fire Fighter Training Area
December 22, 1998

1.0 INTRODUCTION

Metcalf & Eddy , Inc. was contracted by the United States Army Corps of Engineers, Savannah District, to perform quarterly groundwater monitoring at various locations at the former Hunter Army Airfield. This event represents the long term monitoring analytical data for November 1998.

Metcalf & Eddy, Inc. contracted with Analytical Services Inc. (ASI) Laboratories to perform the required analyses of groundwater, surface water and sediment samples. The analytical data was validated using the guidance found in USEPA National Functional Guidelines for Organics Data Review and Inorganics Analysis. This guidance follows the Quality Assurance (QA)/Quality Control (QC) requirements outlined in the USEPA's Test Methods for Evaluating Solid Waste (EPA SW-846). Overall these guidelines mimic the most current editions of the EPA's Functional Guidelines for Reviewing Organic and Inorganic Analyses conducted outside the EPA's Contract Laboratory Program (CLP).

The following sections of this Data Quality Summary Report discuss the laboratory reporting, data validation, problems encountered and corrective actions as applied to the samples and data collected during this determination.

1.1 Field Samples and Analysis

The following report summarizes the validation findings of the samples included in the Sample Data Groups listed below.

SDG	*Date*	*Matrix*	*Samples*	*Field Duplicates*	*Trip Blanks*	*Equipment Blanks*
101129	11/03/98	WATER	10	1	1	0
101200	11/04/98	WATER	14	2	1	1
101245	11/05/98	WATER	10	2	1	1
		SEDIMENT	2	1	1	0

Thirty groundwater samples, three surface water samples, two sediment samples, six field duplicates four trip blanks and two equipment rinsates were analyzed. All samples were analyzed for PAH's by EPA method 8310. Groundwater, surface water and sediment from buildings 133, 710, 728,1310 and the fire training area were analyzed for volatile aromatics by EPA method 8021. Sediment from building 728 was also analyzed for GRO and DRO by EPA methods 8015M and 8100M. All samples were analyzed by ASI Laboratories, Norcross, Georgia using the above listed USEPA SW-846 Methods:

2.0 LABORATORY REPORTING

2.1 Laboratory Blanks

Laboratory blanks or method blanks are artificial samples prepared from the same matrix type as the samples to be analyzed. These blanks are taken through sample preparation and analyzed before the field samples to determine if the glassware, sample preparation or laboratory environment has contaminated the field samples.

Laboratory blanks for all methods of analysis of groundwater, surface water and sediments were analyzed at the required frequency and were free of contaminants with the exception of dibenzo(a,h)anthracene, which was detected in the blank sample associated with the following groundwater field samples; 710MW02, 710MW04, 710SMW01 and 728MW65. See section 3.3 for qualified results.

2.2 Laboratory Control Samples (% Recovery)

Laboratory control samples are artificial samples prepared from the same matrix type as the samples to be analyzed. These samples are processed through sample preparation and analyzed to assess the performance of each analytical system that the laboratory uses to analyze the field samples.

All laboratory control samples for all methods of analysis of groundwater, surface water and sediments were analyzed at the required frequency. Recoveries for acenaphthene, dibenzo(a,h)anthracene and fluoranthene were slightly below the required control limit. See section 3.3 for qualified results.

2.3 Precision (% RPD)

Laboratory precision is evaluated by calculating the relative percent difference (RPD) between the values reported for a matrix spiked (MS) sample and its duplicate, the matrix spiked duplicate (MSD), or any other set of duplicate parameters. The following equation is utilized for this calculation:

$$RPD = \frac{|Vs - Vd|}{[Vs + Vd] / 2} \times 100$$

Where *Vs* is the value reported for the matrix spiked (MS) sample and *Vd* is the value reported for it's duplicate (MSD). Sample RPDs are compared to the analyzing laboratory's precision control limits which are primarily derived from their in-house quality control data.

RPDs for all methods of analysis of groundwater and surface water spiked samples were within required control limits with the exception of three matrix spikes which exhibited slightly high RPDs for PAH's and one matrix spike for volatile organics. RPDs for all methods of analysis of sediment samples were within required control limits with the exception of one matrix spike which exhibited slightly high RPDs for PAH's and two matrix spikes for volatile organics. No qualifiers were required.

RPDs of field duplicates for all methods of analysis of groundwater, surface water and sediment were within the established control limits with the exception of six PAH and four volatile organics samples. No qualifiers were required.

2.4 Surrogate Recovery

Surrogates are compounds similar to analytes of interest but are not normally found in environmental samples. Prior to sample preparation and analysis, surrogates are spiked into laboratory control samples, calibration and check standards, matrix spiked samples and field samples. Accuracy is measured by calculating percent recoveries for each surrogate as follows:

$$\%R = \frac{\text{Concentration of spike found}}{\text{Concentration of spike added}} \text{ X } 100$$

Surrogate recoveries for groundwater, surface water and sediment were all within the required control limits.

2.5 Holding Time

Holding time is the storage time allowed between sample collection and sample analysis when the designated preservation and storage techniques are employed.

All groundwater, surface water and sediment samples were analyzed within required holding times for all methods of analysis with the exception of groundwater sample 1310MW04 analyzed for PAH's and was extracted two days out of hold time.

2.6 Temperature

Chain of custody forms and cooler receipts document that the laboratory received all samples at temperatures ranging from 3 °C to 7 °C. These temperatures are within the acceptable limits of the required preservation requirement of 4 °C plus or minus 2 °C.

2.7 Completeness

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness.

3.0 DATA VALIDATION

The objective when evaluating the quality of chemical data is to determine its usability. The evaluation is based upon the interpretation of the laboratory QC data, the field QC data, and the project Data Quality Objectives (DQOs). The evaluation process is often termed "data validation".

3.1 Laboratory Data Validation

Laboratory data were evaluated to assess , holding times, laboratory blanks, laboratory control samples, surrogate recoveries, and matrix spike/matrix spike duplicate (MS/MSD) relative percent differences (RPDs). These criteria were used to evaluate the bias and precision of the data generated by the laboratory. The bias of the laboratory data was assessed through consideration of the following:

- Adherence to the prescribed method
- Recovery of MS/MSD from field samples
- Method blank contamination
- Adherence to sample preparation and holding times
- Recovery of surrogate spikes
- Field duplicate precision

3.2 Definition of Data Qualifiers

During the data validation process, all laboratory data had to be evaluated and assigned a data qualifier, as applicable. These qualifiers are defined in the February 1994 EPA documents titled, "National Functional Guidelines for Organic and Inorganic Data Review." The guidance also describes procedures to be followed when qualifying data. The data qualifiers are defined as follows:

U = the compound was analyzed for, but was not detected above the level of the associated value
J = the associated value is an estimated quantity. The reported result is qualitatively accurate but quantitatively imprecise.
UJ = the compound was analyzed for, but was not detected, and the associated value is an estimated value due to a variance from quality control limits.
R = the reported result or quantitation limit is rejected and unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte can not be verified

Data qualifier flags were not assigned to data that were totally in compliance with Quality Control requirements.

For organic data, specifically VOCs, the positive and undetected (U) results were qualified as estimated (J/UJ) if one surrogate compound was detected outside acceptable recovery limits and/or the recovery was greater than 10 percent. If the recoveries of one surrogate compound were less than 10 percent, then the positive results were qualified as estimated (J) and the undetected results were rejected (R). Results of PAH compounds are validated in the same manner as VOC, the qualifiers are applied to results with one or more surrogate compounds detected outside the acceptable recovery limits.

3.3 Qualified Results

Polynuclear Aromatic Hydrocarbons - One blank for method EPA8310 contained dibenzo(a,h)anthracene at 0.22 ug/l. Applying the 5X rule, the associated samples 710MW02, 710MW04, 710MWS01 and 728MW65 were qualified as required.

The groundwater matrix spike recoveries and the laboratory control standards recoveries of acenaphthene dibenzo(a,h)anthracene and fluoranthene were slightly lower than the required control limit. All of the associated samples; 133MW01, 133MW02, 133MW04, 133MW05, 133MW06, 133MW07, 133PX15, 1310MW05 and 1310MW06 were qualified as estimated, (J) for these analytes. The sediment matrix spike recovery of pyrene was higher than the required control limit. The detects of associated sample 728SWE03 was qualified as estimated, (J) for pyrene.

Gasoline Range Organics - The sediment matrix spike recovery for GRO was slightly lower than the required control limit. Sample 728SWE03 was qualified as estimated, (J) for GRO.

4.0 PROBLEMS ENCOUNTERED

Any problems encountered during sample analysis for this investigation are described in detail below. Analytical data that did not meet the QC requirements were qualified as stated in **Section 3.3**.

4.1 Holding Times

No problems were present regarding hold times with the exception of one sampled analyzed for EPA method 8310 that was extracted two days out of hold time.

4.2 Surrogate Recovery

No problems were encountered.

4.3 Precision (% RPD)

No problems were encountered outside of a few field duplicate outliers. No qualifiers were applied.

4.4 Field Duplicates

In addition to the matrix spike sample, field duplicates were collected to assess sampling precision. Duplicate samples were collected at a frequency of one per site, per matrix, per sampling event. Field duplicate RPDs were within the quality control limits for 95% of the parameters analyzed. Sample duplicate precision is indicative that these data are comparable and representative of field conditions.

4.5 Equipment Rinsates

Two equipment rinsates were analyzed in with this set of groundwater and surface water samples. These rinsate blanks were found to be free of contamination.

4.6 Laboratory Blanks

Laboratory blanks were within the specified method criteria and the sample results required no qualifications with the exception of the samples mentioned under **Section 3.3**.

4.7 Laboratory Control Standards

Laboratory control standards were within the specified method criteria and the sample results required no qualifications with the exception of the samples mentioned under **Section 3.3**.

5.0 SUMMARY OF DATA QUALITY

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness. The results of the data validation indicate the quality of the data is within QC limits and is acceptable to verify or deny any contamination present in the groundwater at this site.

Reviewed by: _____ 12/22/98

Date: 12/22/98

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR GROUNDWATER

CONSTITUENT (Units in ug/L)	SITE	728MW01	728MW06	728MW11	728MW60	728MW60	728MW61
	SAMPLE ID	728-MW0103	728-MW0603	728-MW1103	728-MW6003	728-MW8003	728-MW6103
	DATE	11/03/98	11/03/98	11/03/98	11/03/98	11/03/98	11/03/98
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Benzene		<0.5	7.5	62	3500	3600	930
Toluene		<0.5	4.0	2.1	270	280	67
Ethylbenzene		<0.5	29	15	710	720	290
Xylene (total)		<1.0	6.8	85	2900	3000	1100
Chlorobenzene		<0.5	<0.5	<0.50	<13	<25	<5.0
1,2-Dichlorobenzene		<0.5	<0.5	<0.50	<13	<25	<5.0
1,3-Dichlorobenzene		<0.5	<0.5	<0.50	<13	<25	<5.0
1,4-Dichlorobenzene		<0.5	<0.5	<0.50	<13	<25	<5.0
		---	---	---	---	---	---
Acenaphthene		<0.302	<0.302	<0.302	<0.302	1.5	0.71
Acenaphthylene		<0.164	7.5	0.83	<0.164	<0.164	18
Anthracene		<0.097	0.72	<0.097	<0.097	<0.097	<0.097
Benzo(a)anthracene		<0.0311	0.4	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(a)pyrene		0.05	0.26	<0.0311	<0.0311	<0.0311	0.12
Benzo(b)fluoranthene		0.09	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Chrysene		0.13	0.34	<0.0311	0.05	0.055	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031	<0.031	<0.031	<0.031	<0.031
Fluoranthene		<0.123	2.3	<0.123	<0.123	<0.123	<0.123
Fluorene		<0.092	2.5	<0.092	0.86	1.0	0.33
Indeno(1,2,3-c,d)pyrene		<0.0311	0.13	<0.0311	<0.0311	<0.0311	<0.0311
Naphthalene		<0.214	<0.214	<0.214	<0.214	<0.214	<0.214
Phenanthrene		<0.103	6.3	<0.103	0.79	0.9	0.24
Pyrene		<0.107	1.4	<0.107	<0.107	<0.107	<0.107

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHODS:8021B, 8310. J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR GROUNDWATER

CONSTITUENT (Units in ug/L)	SITE	728MW63	728MW64	728MW65
	SAMPLE ID	728-MW6303	728-MW6403	728-MW6503
	DATE	11/03/98	11/03/98	11/03/98
	RESULT TYPE	Primary	Primary	Primary
Benzene		910	270	<0.5
Toluene		100	510	<0.5
Ethylbenzene		120	170	<0.5
Xylene (total)		570	1500	<1.0
Chlorobenzene		<2.5	<2.5	<0.5
1,2-Dichlorobenzene		<2.5	<2.5	<0.5
1,3-Dichlorobenzene		<2.5	<2.5	<0.5
1,4-Dichlorobenzene		<2.5	<2.5	<0.5
		---	---	---
Acenaphthene		0.69	<0.302	<0.302
Acenaphthylene		6.9	4.8	<0.164
Anthracene		<0.097	<0.097	<0.097
Benzo(a)anthracene		<0.0311	<0.0311	<0.0311
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		<0.0311	<0.0311	<0.0311
Benzo(ghi)perylene		<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311
Chrysene		<0.0311	<0.0311	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031	<0.21
Fluoranthene		<0.123	<0.123	<0.123
Fluorene		0.23	<0.092	<0.092
Indeno(1,2,3-c,d)pyrene		<0.0311	<0.0311	<0.0311
Naphthalene		<0.214	<0.214	<0.214
Phenanthrene		<0.103	<0.103	<0.103
Pyrene		<0.107	<0.107	<0.107

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHO)21B, 8310. RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - FORMER BUILDING 728
PRIMARY RESULTS FOR GROUNDWATER

CONSTITUENT (Units in ug/L)	SITE	710SMW01
	SAMPLE ID	710-SMW0112
	DATE	11/03/98
	RESULT TYPE	Primary
Benzene		<0.5
Toluene		<0.5
Ethylbenzene		<0.5
Xylene (total)		<1.0
Chlorobenzene		<0.5
1,2-Dichlorobenzene		<0.5
1,3-Dichlorobenzene		<0.5
1,4-Dichlorobenzene		<0.5

Acenaphthene		<0.302
Acenaphthylene		<0.164
Anthracene		<0.097
Benzo(a)anthracene		<0.0311
Benzo(a)pyrene		<0.0311
Benzo(b)fluoranthene		0.041
Benzo(ghi)perylene		<0.157
Benzo(k)fluoranthene		<0.0311
Chrysene		<0.0311
Dibenz(a,h)anthracene		<0.27
Fluoranthene		<0.123
Fluorene		<0.092
Indeno(1,2,3-c,d)pyrene		<0.0311
Naphthalene		<0.214
Phenanthrene		<0.103
Pyrene		<0.107

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR SURFACE WATER

CONSTITUENT (Units in ug/L)	SITE	728SWE01	728SWE01	728SWE03
	SAMPLE ID	728-SW0103	728-SW1003	728-SW0303
	DATE	11/05/98	11/05/98	11/05/98
	RESULT TYPE	Primary	Duplicate 1	Primary
Benzene		3.1	2.9	0.68
Toluene		1.5	1.3	<0.5
Ethylbenzene		1.4	1.2	<0.5
Xylene (total)		3.0	2.7	<1.0
Chlorobenzene		<0.5	<0.5	<0.5
1,2-Dichlorobenzene		<0.5	<0.5	<0.5
1,3-Dichlorobenzene		<0.5	<0.5	<0.5
1,4-Dichlorobenzene		<0.5	<0.5	<0.5
		---	---	---
Acenaphthene		<0.302	<0.302	<0.302
Acenaphthylene		<0.164	<0.164	<0.164
Anthracene		<0.097	<0.097	<0.097
Benzo(a)anthracene		0.097	<0.0311	<0.0311
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		<0.0311	<0.0311	<0.0311
Benzo(ghi)perylene		<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311
Chrysene		<0.0311	<0.0311	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031	<0.031
Fluoranthene		<0.123	<0.123	<0.123
Fluorene		<0.092	<0.092	<0.092
Indeno(1,2,3-c,d)pyrene		<0.0311	<0.0311	<0.0311
Naphthalene		<0.214	<0.214	<0.214
Phenanthrene		<0.103	<0.103	<0.103
Pyrene		<0.107	<0.107	<0.107

Values represent total concentrations unless noted < =Not detected at indicated reporting limit ---=Not analyzed

EPA METHC 021B, 8310. RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR SEDIMENT

CONSTITUENT (Units in mg/kg)	SITE	728SWE03	728SWE03
	SAMPLE ID	728-SE0303	728-SE1003
	DATE	11/05/98	11/05/98
	DEPTH (ft)	0.00	0.00
	RESULT TYPE	Primary	Duplicate 1
Benzene		<0.0040	<0.0040
Toluene		<0.0040	<0.0040
Ethyl benzene		<0.0040	<0.0040
Xylene (total)		<0.0040	<0.0040
		---	---
Acenaphthene		<0.23	<0.23
Acenaphthylene		<0.23	<0.23
Anthracene		<0.23	<0.23
Benzo(a)anthracene		0.42	0.73
Benzo(a)pyrene		0.40	0.60
Benzo(b)fluoranthene		1.0	1.5
Benzo(ghi)perylene		0.28	0.40
Benzo(k)fluoranthene		<0.23	<0.23
Chrysene		0.51	0.88
Dibenzo(a,h)anthracene		<0.23	<0.23
Fluoranthene		0.83	1.6
Fluorene		<0.23	<0.23
Indeno(1,2,3-c,d)pyrene		0.39	0.41
Naphthalene		<0.23	<0.23
Phenanthrene		0.36	0.64
Pyrene		0.74 J	1.5 J
		---	---
DRO		17	17
GRO		0.28 J	---

Values represent total concentrations unless noted <=Not detected at indicated reporting limit ---=Not analyzed

EPA METHODS:8020,8310,DRO,GRO. For RCL 8000AJASI J = RESULT IS ESTIMATED R = RESULT IS REJECTED

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard WELL ID: 728-MW1

PROJECT NAME: HAAF 2 Qtr Sampling LOCATION: B.728

Date sampled: 11/3/98 Time start 0931 End 0937 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 3.60 ft
3. Depth of well from T.O.C. 13.2 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.7
2. X 3 well volumes
3. = 5.0 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.7 gal.	5.50	183	23.7 C
2.Well volume =	3.4 gal.	5.75	179	24.0
3.Well volume =	5.0 gal.	5.86	179	24.1
4.Well volume =	_____ gal.			
5.Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: None

Color: Lt-Br

Appearance: turbid

Weather Conditions: PC., breeze, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 3 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard

WELL ID: 728-MW6

PROJECT NAME: HAAF 2 Qtr Sampling

LOCATION: B.728

Date sampled: 11/3/98 Time start 0910 End 0920

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 5.41 ft

3. Depth of well from T.O.C. 12.9 ft

4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.2

2. X 3 well volumes

3. = 3.7 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.2 gal.	6.23	679	24.2
2.Well volume =	2.4 gal.	6.21	663	24.2
3.Well volume =	3.7 gal.	6.20	698	23.9
4.Well volume =	_____ gal.			
5.Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: Sulphur, petroleum

Color: 4 Br.

Appearance: turbid

Weather Conditions: PC, sl. breeze, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 1000 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard WELL ID: 728-MW11

PROJECT NAME: HAAF 2 Qtr Sampling LOCATION: B.728

Date sampled: 11/3/98 Time start 0810 End 0820 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.55 ft
3. Depth of well from T.O.C. 12.3 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = _____
2. X 3 well volumes
3. = 3.0 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.0 gal.	5.5	79.4	23.3 C
2.Well volume =	2.0 gal.	5.39	59.6	23.3
3.Well volume =	3.0 gal.	5.25	57.9	23.7
4.Well volume =	_____ gal.			
5.Well volume =	_____ gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: Sulphur / petroleum

Color: Lt/dk Br

Appearance: turbid

Weather Conditions: PC, warm, sl. breeze

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 0 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard WELL ID: 728-MW60

PROJECT NAME: HAAF 2 Qtr Sampling LOCATION: B.728

Date sampled: 11/3/98 Time start 0851 End 0853 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 7.16 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = _____
2. X 3 well volumes
3. = 3.9 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.5 gal.	5.85	236	23.7 C
2. Well volume =	3.0 gal.	5.89	244	23.8
3. Well volume =	3.9 gal.	5.87	245	23.8
4. Well volume =	_____ gal.			
5. Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: Sulphur / petroleum

Color: dk br/gn

Appearance: turbid

Weather Conditions: PC, sl. breeze, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 1000 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard WELL ID: 728-MW61

PROJECT NAME: HAAF 2 Qtr Sampling LOCATION: B.728

Date sampled: 11/3/98 Time start 0905 End 0910 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 7.05 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.3
2. X 3 well volumes
3. = 4.0 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.3 gal.	4.83	86.0	23.6 C
2.Well volume =	2.6 gal.	5.45	118.3	23.9
3.Well volume =	4.0 gal.	5.54	105.9	24.2
4.Well volume =	_____ gal.			
5.Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: sulphur / petroleum

Color: DK Br / Gn

Appearance: turbid

Weather Conditions: PC, sl. breeze, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 5.0 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard WELL ID: 728-MW63

PROJECT NAME: HAAF 2 Qtr Sampling LOCATION: B.728

Date sampled: 11/3/98 Time start 0825 End _____ Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 7.25 ft
3. Depth of well from T.O.C. 14.0 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.3
2. X 3 well volumes
3. = 3.9 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.5 gal.	5.47	107.9	23.1 C
2.Well volume =	3.0 gal.	5.55	124.4	23.7
3.Well volume =	3.9 gal.	5.64	130.3	23.6
4.Well volume =	_____ gal.			
5.Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: sulphur / petroleum

Color: dk br/gn

Appearance: turbid

Weather Conditions: PC, sl. breeze, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 0 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: Humphris / Howard WELL ID: 728-MW64

PROJECT NAME: HAAF 2 Qtr Sampling LOCATION: B. 728

Date sampled: 11/3/98 Time start 0852 End 0856 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 5.87 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.2
2. X 3 well volumes
3. = 3.6 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14 [(0.17 \text{ ft.})^2 \div 4] (\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal / ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.2 gal.			
2. Well volume =	2.4 gal.			
3. Well volume =	3.6 gal.			
4. Well volume =	_____ gal.			
5. Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer Field preservation - _____

Sample Description _____

Odor: Sulphur

Color: Lt. Br

Appearance: turbid

Weather Conditions: PC, sl. breeze, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 2.5 ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

Metcalf & Eddy

SAMPLED BY: Humphris / Howard

WELL ID: 728-MW65

PROJECT NAME: HAAF 2 Qtr Sampling

LOCATION: B.728

Date sampled: _____ Time start _____ End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 7.20 ft

3. Depth of well from T.O.C. 13.0 ft

4. Feet of standing water (h) _____ ft

1. Standing water (gal.) = 1.3

2. X 3 well volumes

3. = 4.0 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:

Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17\text{ ft.})^2 \div 4](\_\_\_\_\text{ ft.}) \times 7.48\text{ gal/ft.}^3 = \_\_\_\_\text{ gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.5 gal.	NA Spilled	~~167~~ DI NA	NA
2. Well volume =	3.0 gal.	5.90	161.4	23.1
3. Well volume =	4.0 gal.	5.90	152.1	23.2
4. Well volume =	_____ gal.			
5. Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: None

Color: Lt. Br.

Appearance: turbid

Weather Conditions: PC/overcast, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: 0 ppm

COMMENTS: _____

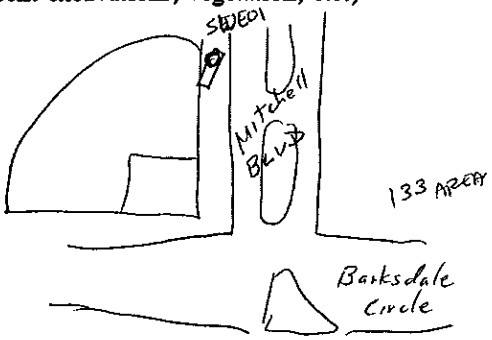
FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

Metcalf & Eddy

Date 11/5/98 Location B.728 SWE01

Samplers Used SS bowl

Drawing of sampling location (including location description as well as the pressure of debris surface sheens, debris surface sheens, recent excavations, vegetation, etc.)



Surface Water Only
No sediment
89 µmhos/cm
6.81 pH
18.6 °C
± 10 gpm

Weather PC, mild, sl. breeze

Soil/sediment sampling parameters: 8240 8010 8021 8020 8310 8100 8270 GRO DRO (for Sediment) PPM 8080

Description of sample (water)

Time of sample collection 1400

OVA Readings NA

Depth of water (for sediment sampling) 4", ± 10 gpm

Decontamination (page number references) Work Plan pA 10-2

Spoons or spatulas

Trowel

Hand corer

Hand auger

Bowls ✓

Split spoons

Photograph frame numbers NA

Signature of field team personnel making data entry) D. Humphries

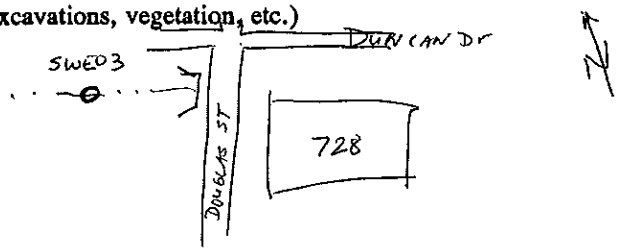
FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

Metcalf & Eddy

Date 11/5/98 Location B. 728 SWE03

Samplers Used ss bowl, ss spoon, encore

Drawing of sampling location (including location description as well as the pressure of debris surface sheens, debris surface sheens, recent excavations, vegetation, etc.)



SURFACE WATER SAMPLE collected also.
99 µmhos/cm
19.1 °C
6.39 pH

Weather PC, mild-warm

Soil/sediment sampling parameters: 8240 8010 (8021) (8310) 8020 8100 8270 (GRO for seds) (DRO) PPM 8080

Description of sample dk/lt Br. fine sand, organics

Time of sample collection 1455

OVA Readings NA

Depth of water (for sediment sampling) 5" deep

Decontamination (page number references) Workplan pA 10-2

Spoons or spatulas ✓

Trowel

Hand corer

Hand auger

Bowls ✓

Split spoons

Photograph frame numbers NA

Signature of field team personnel making data entry) D. Humphreys

SITE RANKING FORM

Facility Name: Former Building 728 **Ranked by:** D. Humphris
County: Chatham **Facility ID#:** 9025035 and 9025049 **Date Ranked:** 12/4/98

SOIL CONTAMINATION

A. Total PAHs -
Maximum Concentration found on the site (Assume <0.660 mg/kg if only gasoline was stored on site)

- ☐ ≤ 0.660 mg/kg = 0
- ☐ > 0.66 - 1 mg/kg = 10
- ☐ > 1 - 10 mg/kg = 25
- ■ > 10 mg/kg = 50

B. Total Benzene -
Maximum Concentration found on the site

- ☐ ≤ 0.005 mg/kg = 0
- ☐ > 0.005 - .05 mg/kg = 1
- ■ >.05- 1 mg/kg* = 10
- ☐ > 1-10 mg/kg = 25
- ☐ > 10 - 50 mg/kg = 40
- ☐ > 50 mg/kg = 50

C. Depth to Groundwater
(bls = below land surface)

- ☐ > 50' bls = 1
- ☐ > 25'-50' bls = 2
- ☐ > 10'-25' bls = 5
- ■ ≤10 bls = 10

Fill in the blanks: (A. 50) + (B. 10) = (60) x (C. 10) = (D. 600)

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See guidelines for definition of "sheen").

- ☐ No free product = 0
- ☐ Sheen - 1/8" = 250
- ☐ > 1/8" - 6" = 500
- ■ > 6" - 1 ft = 1,000
- ☐ For every additional inch, add another 100 points = 1,000 +

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release)

- ☐ ≤ 5 ug/L = 0
- ☐ > 5 - 100 ug/L = 5
- ☐ > 100- 1,000 ug/L = 50
- ■ > 1,000-10,000 ug/L = 100
- ☐ > 10,000 ug/L = 250

Fill in the blanks: (E. 1000) + (F. 100) = (G. 1100)

*Two samples had detection levels <60 mg/kg due to dilutions.

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤ 500'	= 500
☐	> 500' - 1/4 mi	= 25
☐	> 1/4 mi - 1 mi	= 10
☐	> 1 mi - 2 mi	= 2
■	> 2 mi	= 0
For lower susceptibility areas only		
☐	> 1 mi	= 0

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤ 100'	= 500
☐	> 100' - 500'	= 25
☐	> 500' mi - 1/4 mi	= 5
☐	> 1/4 mi - 1/2 mi	= 2
■	> 1/2 mi	= 0
For lower susceptibility areas only		
☐	> 1/4	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULTS** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table.

☐	Impacted	= 500
■	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
☐	> 1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
■	> 1,000' or no free product	= 0

Fill in the blanks: **=(H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50**

(G. 1100) x (L. 500) = M. 55,000

(M. 55,000) + (D. 600) = N. 55,600

P. SUSCEPTIBILITY AREA MULTIPLIER

☐ If site is located in a low Groundwater Pollution Susceptibility Area - 0.5

■ All other sites = 1

Q. EXPLOSION HAZARD

Have any explosion vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

■ No = 0

Fill in the blanks: **(N. 55,600) x (P. 1) = (L. 55,600) + (Q. 0)**

= 55,600

ENVIRONMENTAL SENSITIVITY SCORE

EXHIBIT C

THIRD QUARTERLY MONITORING ONLY REPORT

U.S. Army Corps
of Engineers

FINAL THIRD QUARTERLY MONITORING PROGRESS REPORT FORMER BUILDING 728 EPD FACILITY NO. 9025035 and 9025049

at

HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

under

Contract No. DACA01-96-D-0020
Delivery Order No. CV03

APRIL 1999

Submitted to:

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH, GEORGIA

Prepared by:

METCALF & EDDY, INC.
ATLANTA, GEORGIA

FINAL THIRD QUARTERLY MONITORING PROGRESS REPORT
FORMER BUILDING 728
EPD FACILITY NO. 9025035 AND 9025049
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

TABLE OF CONTENTS

APPENDICES

MONITORING ONLY REPORT

Submittal Date: April 1999 Monitoring Report Number: 3rd Quarterly Sampling

For Period Covering: December 1998 to February 1999

Facility Name: Former Building 728 Street Address: Hunter Army Airfield

Facility ID: 9025035 and 9025049 City: Savannah County: Chatham Zip Code 31409

Latitude: 32° 01' 48" Longitude: 81° 08' 03"

Submitted by UST Owner/Operator:

Name: Mr. Tom Fry

Company: HQs, 3d ID (Mech) & Fort Stewart

Address: 1557 Frank Cochran Drive

City: Fort Stewart State: GA

Zip Code: 31314-4928

Telephone: 912-767-1078

Prepared by Consultant/Contractor:

Name: David Wilderman

Company: Metcalf & Eddy, Inc.

Address: 1201 Peachtree St. N.E.
400 Colony Square, Suite 1101

City: Atlanta State: GA

Zip Code: 30361

Telephone: 404-881-8010

I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

I hereby certify that I have directed and supervised the field work and preparation of this plan, in accordance with State Rules and Regulations. As a registered professional geologist and/or professional engineer, I certify that I am a qualified groundwater professional, as defined by the Georgia State Board of Professional Geologist. All of the information and laboratory data in this plan and in all of the attachments are true, accurate, complete, and in accordance with applicable State Rules and Regulations.

Name: DAVID WILDERMAN

Signature:

Date: 3.30.99

Georgia Stamp or Seal

II. PROJECT SUMMARY

(Appendix 1, Figure 1: Site Location Map)

Provide a brief description or explanation of the site and a brief chronology of environmental events leading up to this report.

The former Building 728 site consisted of twelve USTs and eight oil/ water separators associated with the former Northern Fuel Battery and four USTs located near the rail spur; south of the fuel battery. The former Building 728 site is located on the northwestern portion of Hunter Army Airfield (HAAF) as illustrated in **Appendix 1, Figure 1**. A plan view of the former Northern Fuel Battery area is provided on **Figure 2a** in **Appendix 1**. During the 1940s, the tanks held aviation fuel which was pumped via pipelines to fueling pits on the runway. Around 1957, the entire system was converted to store an alcohol/water mixture used as an aircraft de-icer. Later, some of the tanks near former Building 728 were used to store waste oil. The four USTs located directly adjacent to former Building 728 had a capacity of 12,000 gallons. These tanks held aviation fuel and appear to have been part of the fuel hydrant system.

UST removal activities in the former Building 728 area were completed by Anderson Columbia Environmental, Inc. (ACE) in June 1994. A total of 43,140 gallons of hazardous and non-hazardous waste water was disposed of by Industrial Water Services, Inc. A total of 25 tanks (12 JP-4/aviation gas USTs, 4 aviation gas USTs, 8 oil/water separators, 1 water control pit) were removed. During tank removal activities, 2623.91 tons of soil was removed and transported to Laidlaw Environmental Services for incineration. Soil and groundwater samples were collected below the tank excavations in accordance with Georgia EPD UST closure requirements. Contamination in soil and groundwater has been confirmed by the sampling and no free product was encountered during the removal activities.

Metcalf & Eddy completed an initial investigation of the former Building 728 area in September 1995. The findings of the subsurface investigation were summarized in the Final CAP-Part A submitted to the Georgia EPD UST Program in August 1996. A summary of the UST closure activities was also presented in the CAP-Part A. A follow up investigation of the former Building 728 site culminated in the submittal of a CAP-Part B which was submitted to the EPD in December 1997. Free product was detected in monitoring wells MW08, MW59, and MW62. Free product recovery is ongoing utilizing a skimmer at well MW08 and absorbent socks (changed monthly) at wells MW59 and MW62. Pending funding for a remediation system recommended in the CAP-Part B, the USACE elected to perform quarterly monitoring which may aid in the design of the remediation system. This report documents the third quarterly sampling and analytical results.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

Groundwater table elevations were measured in nineteen of twenty monitoring wells on February 16, 1999 (MW55 was unable to be located and was not gauged) in order to determine the direction of groundwater flow. Eight monitoring wells (MW01, MW06, MW11, MW60, MW61, MW63, MW64, and MW65) were selected for sampling by the USACE. These monitoring wells were purged and sampled on February 17, 1999. All samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX - Method 8021) and polynuclear aromatic hydrocarbons (PAHs - Method 8310). Purge water was containerized in drums and stored at the PDO Yard until proper disposal is arranged. Surface water samples were collected from upgradient (SWE-01) and downgradient (SWE-03) of former Building 728. A sediment sample was also collected from the SWE-03 location. No sediment sample could be collected at the upgradient SWE-01 location because sediment was not present in the drainage culvert. The surface water and sediment samples were collected on February 17, 1999. Surface water and sediment were analyzed for BTEX and PAHs as above with the additional sediment analyses of total petroleum hydrocarbons-diesel range organics (DRO) and gasoline range organics (GRO) (both Method 8015M)

A. Potentiometric Data:

*Tabulate all data and illustrate last 2 monitoring events findings in **Figures 2a and 2b.***
***(Appendix 1, Figure 2a and 2b:** Potentiometric Surface Maps)*
***(Appendix 2, Table 1:** Groundwater Elevations)*

Discuss groundwater flow at this site and implications for this project.

Water levels were measured in nineteen monitoring wells (the two deep wells were not measured) on February 16, 1999. **Table 1** in **Appendix 2** lists the wells and water level elevations. Compared to the second quarterly sampling measurements taken on November 2, 1998, water levels are an average of 0.41 feet higher. **Figures 2a** and **2b** show the potentiometric surface map generated from the water levels from the second and third quarter sampling, respectively. Groundwater flow is generally to the northwest with a gradient of approximately 0.009 ft/ft. No significant changes were observed in the potentiometric surface, flow direction, or gradient compared to the information presented in the second quarterly monitoring report although recent excavation near MW02 may have caused an anomalous water level.

B. Analytical Data:

*Tabulate all data for monitoring events findings in **Table 2**, illustrate last two events findings in **Figures 3a and 3b**, and graph the trend of contaminant concentration in **Figure 4.***
***(Appendix 1, Figure 3a and 3b:** Groundwater Quality Maps)*

Discuss groundwater analysis results, trend of contaminant concentrations, and implications for this project.

Well sampling began with the well located in the area suspected of least contamination. Protective gloves were worn during sampling and changed between samples. The sampling procedures used were identical to those used in previous sampling episodes (CAP-Part A and B). Samples were shipped via Federal Express overnight to Analytical Services, Inc. (ASI) located in Norcross, Georgia for BTEX and PAH analyses. Analytical results are summarized in **Table 2**.

The eight monitoring wells and the potable well (Hunter 1) were sampled on February 17, 1999 for BTEX (Method 8021) and PAHs (Method 8310). Analytical results confirm wells MW06, MW11, MW60, MW61, MW63, and MW64 remain impacted by petroleum hydrocarbons as identified in the previous sampling episodes. Analytical results indicate decreases in benzene concentrations in monitoring wells MW11, MW60, and MW61. Total BTEX concentrations also decreased in all impacted wells. No changes were observed at MW01 and MW65 where benzene and total BTEX are below detection limits. The benzene concentrations at MW60, MW61, MW63, and MW64 exceed the Georgia EPD In-Stream Water Quality Standard (IWQS) of 71.28 µg/L (**Table 2**). **Figure 4** lists the benzene concentrations for each quarter plus a graph of the benzene values over time. **Figures 3a** and **3b** show the concentrations of hydrocarbons in groundwater from the second and third quarterly monitoring periods, respectively.

PAHs were detected in monitoring wells MW06, MW11, MW60, MW61, MW63, and MW64. No PAH constituent detected exceeded the IWQS (0.0311 µg/L for individual compounds) at any well location. The PAHs identified are indicative of a diesel source rather than gasoline.

The potable water supply well was also sampled for BTEX and PAHs. No petroleum hydrocarbon compounds were detected.

Surface water results indicate no IWQS exceedences of BTEX or PAH compounds (**Table 3**). Benzene was detected at 2.5 µg/L at SWE01 (upgradient) and at 2.1 µg/L at SWE03 (downgradient). **Figures 3a** and **3b** show the two surface water sampling locations and results. The IWQS of 0.0311 µg/L was exceeded in the duplicate sample collected at SWE03 for chrysene. The chrysene concentration in the duplicate sample was 0.07 µg/L.

Sediment was not observed at SWE01 and was therefore collected only from SWE03. The analytical results (**Table 4**) indicate only toluene was detected at 0.004J (J=estimated) mg/kg. Of the regulated PAHs detected, only benzo(a)anthracene exceeded its soil threshold level (STL) of 0.660 mg/kg. The STLs are listed in Georgia Rule Chapter 391-3-15.09, Table B, less than 500 feet to surface water. DRO and GRO were detected at

threshold level (STL) of 0.660 mg/kg. The STLs are listed in Georgia Rule Chapter 391-3-15.09, Table B, less than 500 feet to surface water. DRO and GRO were detected at 72J and 0.34 mg/kg, respectively (neither are regulated). All analytical data is presented in **Appendix 3**.

IV. SITE RANKING *(NOTE: RE-RANK SITE AFTER EACH MONITORING EVENT)*

(Appendix 4: Site ranking results)

Environmental Site Sensitive Score: 55,600
The Site Ranking Form is presented in **Appendix 4**.
The Environmental Site Sensitive Score has not changed from the Second Quarterly Sampling

V. CONCLUSIONS/RECOMMENDATIONS

Provide justification of no-further-action-required recommendation or briefly discuss future monitoring plans for this site.

This completes the third quarter of monitoring at this site. No significant changes in the groundwater flow direction or gradient were observed. Soluble petroleum hydrocarbon constituents continue to impact six monitoring wells. Free product recovery will continue in monitoring well MW08 via the belt skimmer and in wells MW59 and MW62 via absorbent socks. Continued monitoring will determine whether or not the plume is migrating downgradient.

VI. REIMBURSEMENT ATTACHED N/A

(Appendix 5: Reimbursement Application)

Hunter Army Airfield is a federally owned facility and has funded the "Monitoring Only" activities for UST# 1-16, former Building 728, Facility I.D.# 9025035 and 9025049, using Environmental Restoration Account funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

021974\728-3qmr.doc

DUNCAN STREET

DOUGLAS STREET

FLOW
OPEN DITCH

SWE03

MW14
11.50

MW65
11.21

MW67
NA

MW11
12.34

MW10
12.51

MW63
12.90

MW09
13.27

MW61
13.29

MW60
13.14

MW62
NA

MW08
NA

MW05
14.19

MW13
12.19

MW64
13.11

MW59
NA

MW06
14.61

SWE01
ACTUAL LOCATION
540' SOUTHEAST (UPGRADIENT)
OF SYMBOL IN DROP INLET

MW03
14.65

MW66
NA

MW58
14.52

FORMER
BLDG
728

MW57
14.69

MW56
14.94

MW12
14.03

MW02
15.08

MW04
(DESTROYED)

MW55
15.07

MW01
15.60

FORMER
BLDG 1006

FORMER
BLDG 710

FORMER
BLDG 723

WATER
TOWER

11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5

LEGEND

- MW55 - MONITORING WELL LOCATION
- FENCE
- BUILDINGS (DEMOLISHED)
- APPROXIMATE FORMER UST LOCATION
- SWE01 - SURFACE WATER/SEDIMENT LOCATION
- FIRE HYDRANT
- POWER POLE
- MH - MANHOLE
- DI - DROP INLET
- NA - NOT MEASURED
- 15.5 — POTENTIOMETRIC CONTOUR

MEASUREMENTS TAKEN 11/02/98

60 30 0 60 120FT

SCALE: 1"= 60'

FIGURE 2a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
POTENTIOMETRIC SURFACE MAP
SECOND QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

LOC: p:\proj\21974HAF\CVDHHAF021.DGN DATED: 03-26-99 BY: ROS

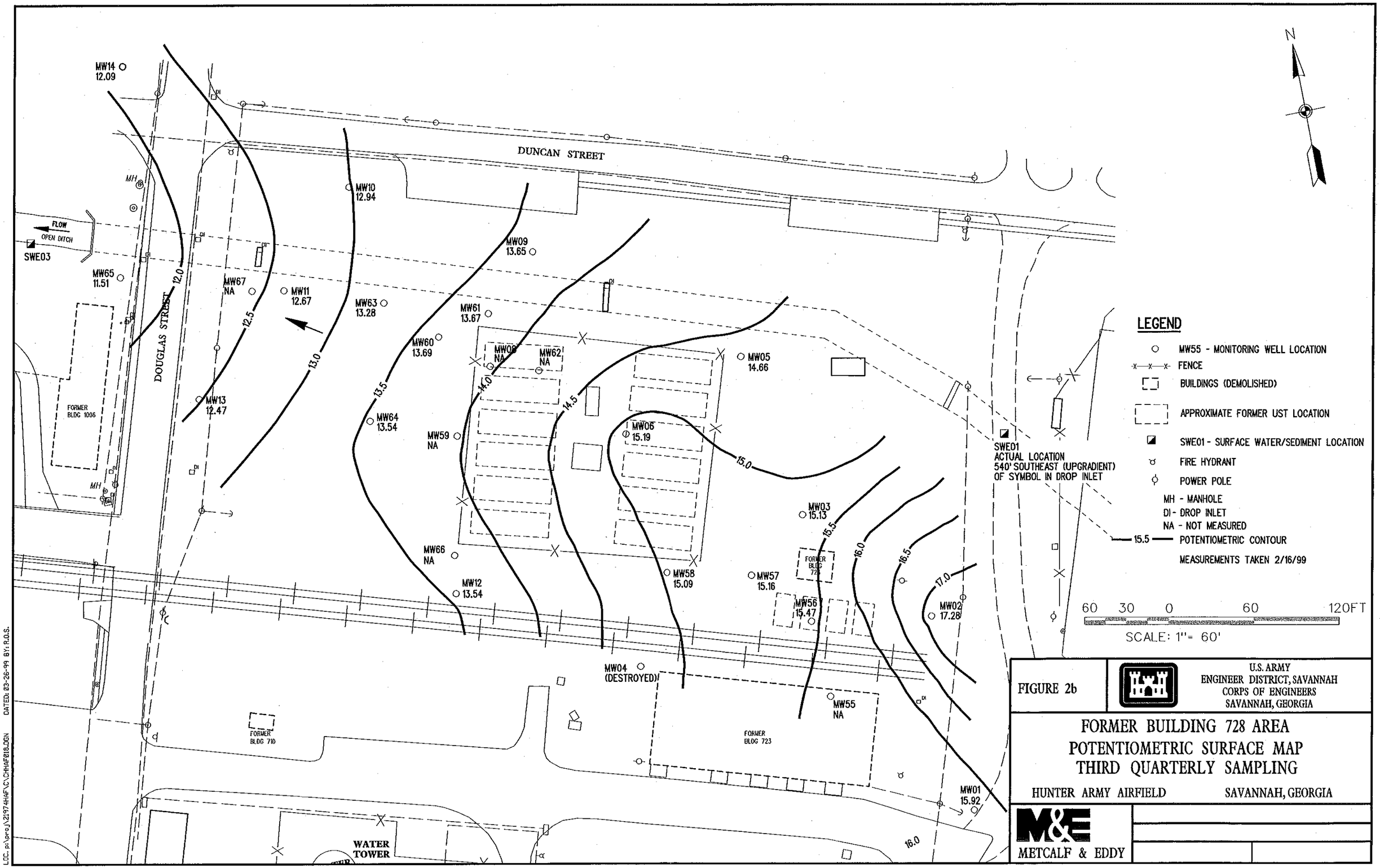


FIGURE 2b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
POTENTIOMETRIC SURFACE MAP
THIRD QUARTERLY SAMPLING

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

LOC: p:\proj\21974HAF\C\CHHAF018.DGN DATED: 03-26-99 BY: R.O.S.

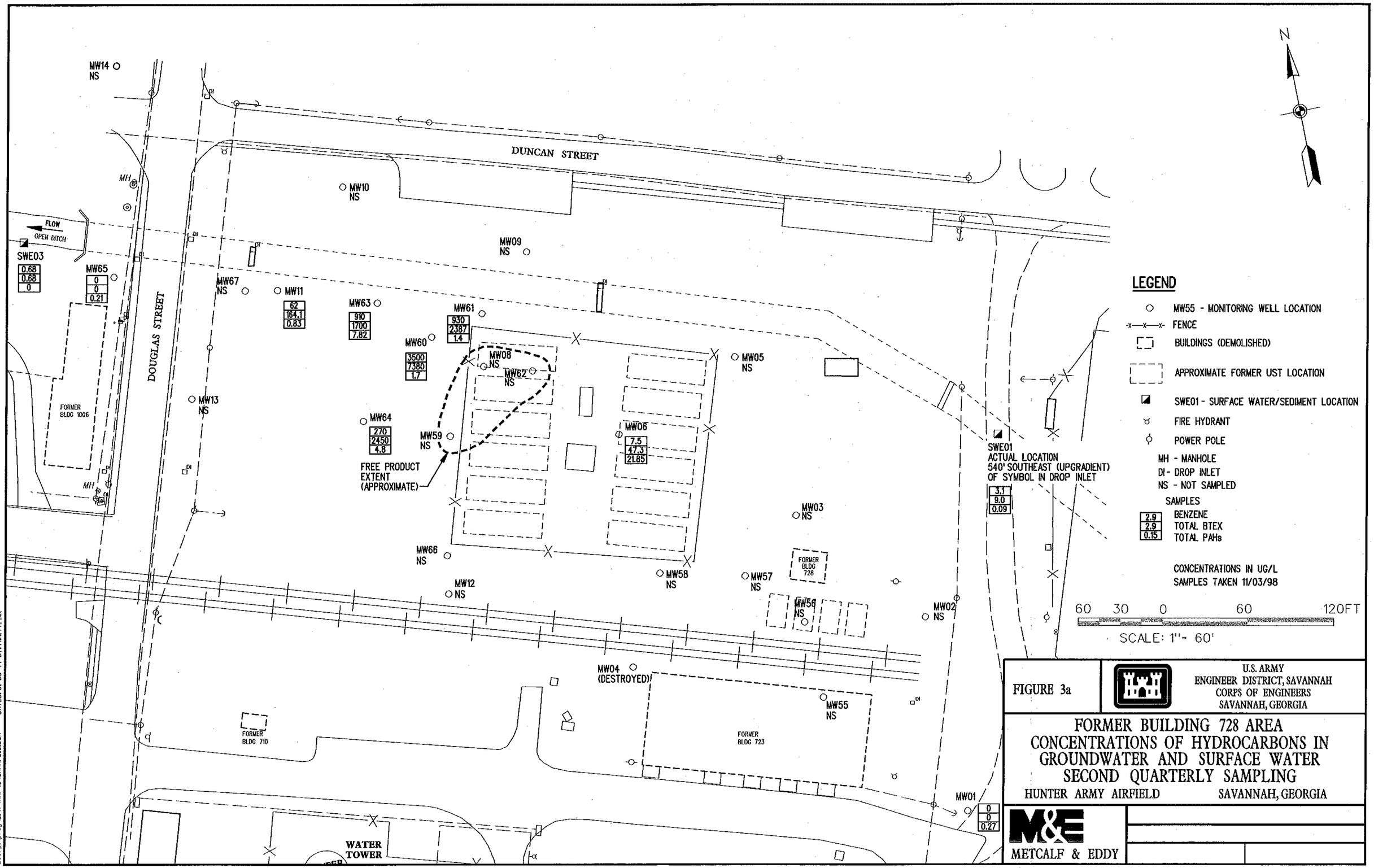


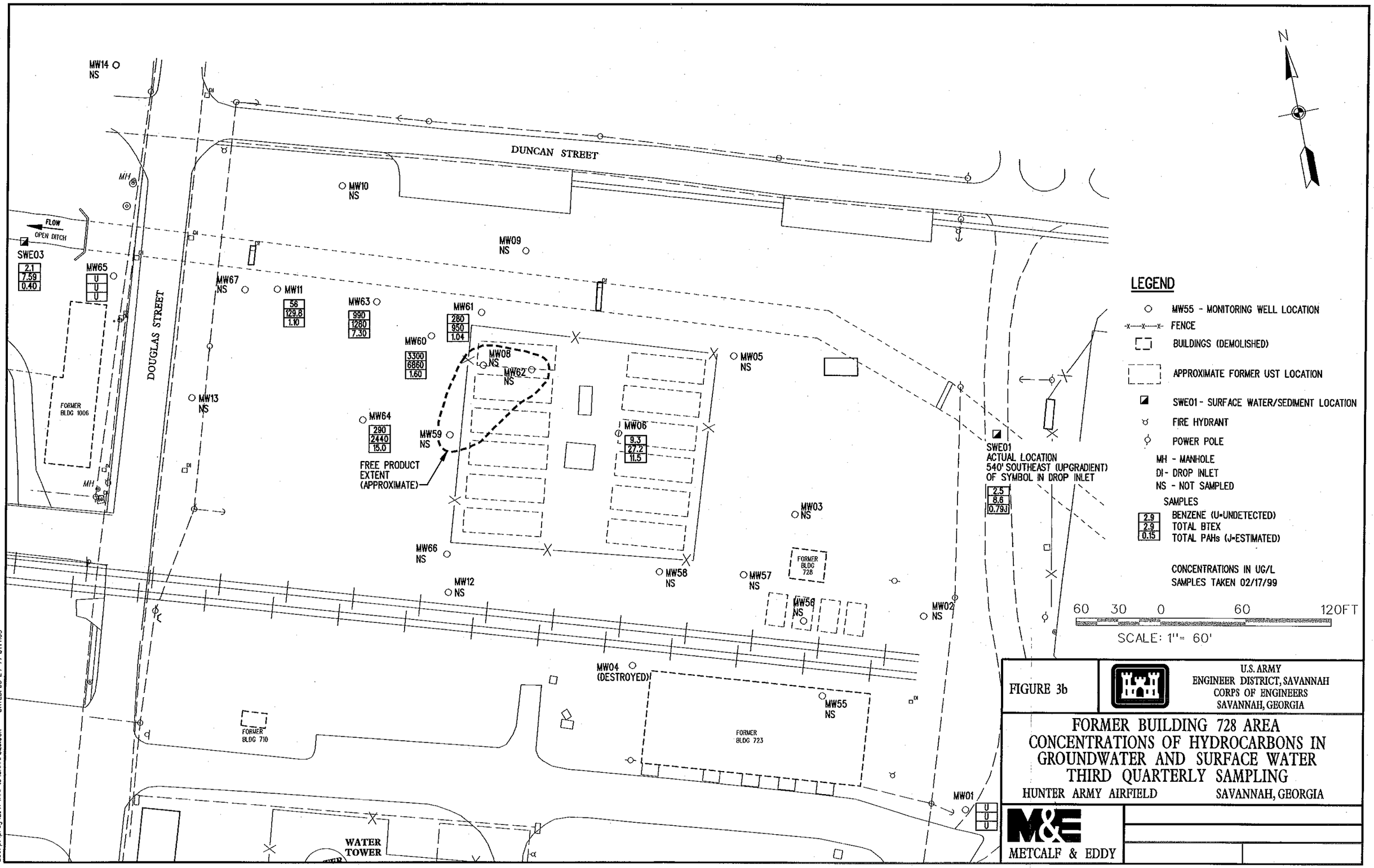
FIGURE 3a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA CONCENTRATIONS OF HYDROCARBONS IN GROUNDWATER AND SURFACE WATER SECOND QUARTERLY SAMPLING

HUNTER army AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY



LOC_px\pro\J21974HAF\C\CHHAF023.DGN DATED: 03-29-99 BY: ROS

FIGURE 3b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA CONCENTRATIONS OF HYDROCARBONS IN GROUNDWATER AND SURFACE WATER THIRD QUARTERLY SAMPLING

HUNTER army AIRFIELD SAVANNAH, GEORGIA

METCALF & EDDY

FIGURE 4

ANNUAL MONITORING SPREADSHEET (BENZENE) - THIRD QUARTER
FORMER BUILDING 728
HUNTER ARMY AIRFIELD

WELL #	BENZENE RESULTS (ug/L)				
	CAP-B	1'st QTR	2'nd QTR	3'rd QTR	4'th QTR
MW01	0	0	0	0	
MW02	0	NS	NS	NS	
MW03	4.2	NS	NS	NS	
MW05	0	NS	NS	NS	
MW06	24	0	7.5	9.3	
MW09	0	NS	NS	NS	
MW10	0	NS	NS	NS	
MW11	1700	95	62	56	
MW12	56	NS	NS	NS	
MW13	1.4	NS	NS	NS	
MW14	0	NS	NS	NS	
MW55	0	NS	NS	NS	
MW56	17	NS	NS	NS	
MW57	24	NS	NS	NS	
MW58	41	NS	NS	NS	
MW60	1400	3000	3500	3300	
MW61	910	850	930	280	
MW63	2400	930	910	990	
MW64	81	450	270	290	
MW65	0	0	0	0	
SMW01	0	0	0	0	

NS - Not Sampled

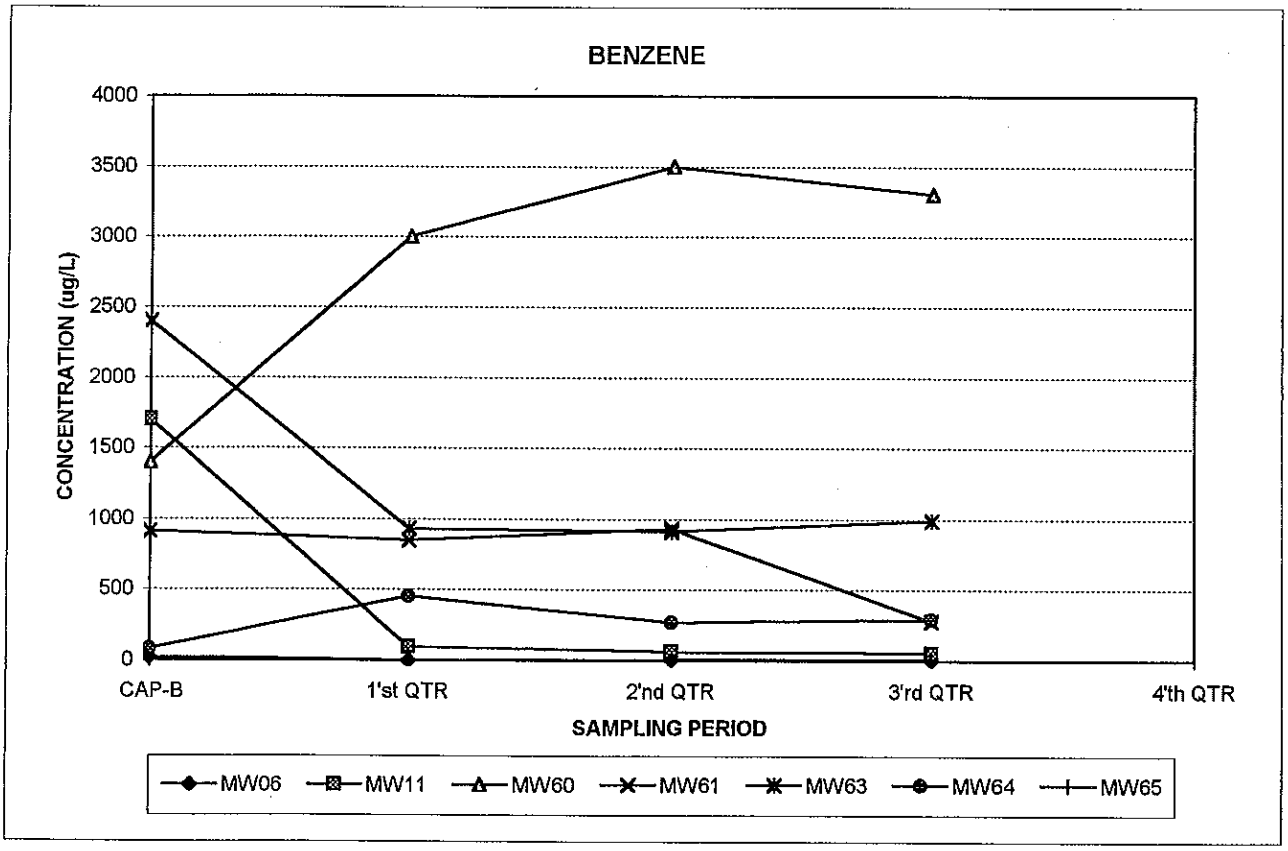


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TABLE 1: GROUNDWATER ELEVATIONS
Former Building 728, Third Quarterly Sampling
Hunter Army Airfield
Chatham County, Facility ID Nos. 9025035 and 9025049

Location	Screen Interval ft, bgs	Water Depth, TOC	TOC Elevation, ft, msl	Water Level Elevation, ft, msl	Surface Elevation, ft, msl	Free Prod. Thickness ft.
CAP-A						
MW01	3.2-13.2	3.28	19.20	15.92	19.5	
MW02	3.8-13.8	3.23	20.51	17.28	20.8	
MW03	2.6-12.6	5.67	20.80	15.13	21.1	
MW04	3.4-13.4	Destroyed	3/97			
MW05	3.3-13.3	5.71	20.37	14.66	20.7	
MW06	2.9-12.9	4.83	20.02	15.19	20.4	
MW08	3.5-13.5	Product	Recovery		19.6	0.85 (11/98)
MW09	3.1-13.1	6.62	20.27	13.65	20.5	
MW10	2.9-12.9	6.17	19.11	12.94	19.4	
MW11	2.3-12.3	6.22	18.89	12.67	19.3	
MW12	2.9-12.9	4.97	18.51	13.54	18.8	
MW13	4.0-14.0	5.92	18.39	12.47	18.7	
MW14	4.0-14.0	6.67	18.76	12.09	19.0	
CAP-B						
MW55	2.0-12.0	NA	18.32	NA	18.5	
MW56	1.4-11.4	4.22	19.69	15.47	19.8	
MW57	2.0-12.0	4.94	20.10	15.16	20.3	
MW58	2.0-12.0	4.12	19.21	15.09	19.4	
MW59	2.0-12.0	Product	Recovery	NA	19.4	0.15 (3/97)
MW60	3.0-13.0	6.61	20.30	13.69	20.4	
MW61	3.0-13.0	6.67	20.34	13.67	20.5	
MW62	3.0-13.0	Product	Recovery	NA	19.9	0.81 (3/97)
MW63	4.0-14.0	6.87	20.15	13.28	20.3	
MW64	3.0-13.0	5.44	18.98	13.54	19.1	
MW65	3.0-13.0	6.90	18.41	11.51	18.6	
MW66	35.6-40.6	NA	18.60	NA	18.8	
MW67	33.0-38.0	NA	18.82	NA	19.0	

bgs-below ground surface

TOC-top of casing

msl-mean sea level

Measurements on 2/16/99

NA- not measured

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TABLE 2 : GROUNDWATER ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
MW01	2/17/99	Primary	U	U	U	U	U	U
MW06	2/17/99	Primary	9.3	3.9	14	U	27.2	11.5
MW11	2/17/99	Primary	56	2	9.8	62	129.8	1.10
MW60	2/17/99	Primary	3300	230	630	2700	6860	1.60
MW61	2/17/99	Primary	280	U	130	540	950	1.04
MW63	2/17/99	Primary	990	120	130	40	1280	7.30
MW64	2/17/99	Primary	290	560	190	1400	2440	15.0
MW64	2/17/99	Duplicate 1	310	590	210	1500	2610	16.0
MW65	2/17/99	Primary	U	U	U	U	U	U
SMW01(B710)	2/17/99	Primary	U	U	U	U	U	U
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
SW01	2/17/99	Primary	2.5	1.4	U	4.7	8.6	0.79 J
SW03	2/17/99	Primary	2.1	0.59	U	4.9	7.59	0.40
SW1004	2/17/99	Duplicate	1.9	U	U	U	1.9	0.15
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.
J = Estimated

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TABLE 4 : SEDIMENT ANALYTICAL RESULTS

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TOTAL BTEX (mg/kg)	TOTAL PAH (mg/kg)
SE03	2/17/99	Primary	U	0.004 J	U	U	0.004 J	5.94 J
SE1004	2/17/99	Duplicate	U	0.007 J	U	U	0.007 J	7.70 J
ARARS		STL	0.017	115	18	700	-	-

U = Not Detected.
J = Estimated
(-) = No STL listed (Table B, <500 ft to surface water).

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DATA QUALITY SUMMARY REPORT

Hunter Army Airfield - Long Term Monitoring
Former Buildings 133, 710 & 728
March 24, 1999

1.0 INTRODUCTION

Metcalf & Eddy, Inc. was contracted by the United States Army Corps of Engineers, Savannah District, to perform quarterly groundwater monitoring at various locations at the former Hunter Army Airfield. This event represents the long term monitoring analytical data for November 1998.

Metcalf & Eddy, Inc. contracted with Analytical Services Inc. (ASI) Laboratories to perform the required analyses of groundwater, surface water and sediment samples. The analytical data was validated using the guidance found in USEPA National Functional Guidelines for Organics Data Review and Inorganics Analysis. This guidance follows the Quality Assurance (QA)/Quality Control (QC) requirements outlined in the USEPA's Test Methods for Evaluating Solid Waste (EPA SW-846). Overall these guidelines mimic the most current editions of the EPA's Functional Guidelines for Reviewing Organic and Inorganic Analyses conducted outside the EPA's Contract Laboratory Program (CLP).

The following sections of this Data Quality Summary Report discuss the laboratory reporting, data validation, problems encountered and corrective actions as applied to the samples and data collected during this determination.

1.1 Field Samples and Analysis

The following report summarizes the validation findings of the samples included in the Sample Data Groups listed below.

SDG	*Date*	*Matrix*	*Samples*	*Field Duplicates*	*Trip Blanks*	*Equipment Blanks*
104778	02/17/99	WATER	13	2	1	1
		SEDIMENT	1	1	0	0
104849	02/18/99	WATER	11	2	1	0

Twenty-five groundwater samples, two surface water samples, one sediment samples, five field duplicates two trip blanks and one equipment rinsate were analyzed. All water samples were analyzed for PAH's by EPA method 8310. All sediment samples were analyzed for PAH's by EPA method 8100. Groundwater, surface water from buildings 133, and 710 were analyzed for volatile aromatics by EPA method 8021. Sediment from building 728 was analyzed for volatile aromatics by EPA method 8260 and for GRO/DRO by EPA methods 8015M and 8100M. All samples were analyzed by ASI Laboratories, Norcross, Georgia using the above listed USEPA SW-846 Methods:

2.0 LABORATORY REPORTING

2.1 Laboratory Blanks

Laboratory blanks or method blanks are artificial samples prepared from the same matrix type as the samples to be analyzed. These blanks are taken through sample preparation and analyzed before the field samples to determine if the glassware, sample preparation or laboratory environment has contaminated the field samples.

Laboratory blanks for all methods of analysis of groundwater, surface water and sediments were analyzed at the required frequency and were free of contaminants.

2.2 Laboratory Control Samples (% Recovery)

Laboratory control samples are artificial samples prepared from the same matrix type as the samples to be analyzed. These samples are processed through sample preparation and analyzed to assess the performance of each analytical system that the laboratory uses to analyze the field samples.

All laboratory control samples for all methods of analysis of groundwater, surface water and sediments were analyzed at the required frequency.

2.3 Precision (% RPD)

Laboratory precision is evaluated by calculating the relative percent difference (RPD) between the values reported for a matrix spiked (MS) sample and its duplicate, the matrix spiked duplicate (MSD), or any other set of duplicate parameters. The following equation is utilized for this calculation:

$$\mathbf{RPD} = \frac{|Vs - Vd|}{[Vs + Vd] / 2} \mathbf{X\ 100}$$

Where *Vs* is the value reported for the matrix spiked (MS) sample and *Vd* is the value reported for it's duplicate (MSD). Sample RPDs are compared to the analyzing laboratory's precision control limits which are primarily derived from their in-house quality control data.

RPDs for all methods of analysis of groundwater and surface water spiked samples were within required control limits with the exception of eleven matrix spikes which exhibited slightly high RPDs for PAH's. RPDs for all methods of analysis of sediment samples were within required control limits with the exception of one matrix spike which exhibited slightly high RPDs for acenaphthene and one matrix spikes for one volatile organics. No qualifiers were required.

RPDs of field duplicates for all methods of analysis of groundwater, surface water and sediment were within the established control limits with the exception of six PAH and five volatile organics sample. No qualifiers were required.

2.4 Surrogate Recovery

Surrogates are compounds similar to analytes of interest but are not normally found in environmental samples. Prior to sample preparation and analysis, surrogates are spiked into laboratory control samples, calibration and check standards, matrix spiked samples and field samples. Accuracy is measured by calculating percent recoveries for each surrogate as follows:

$$\%R = \frac{\text{Concentration of spike found}}{\text{Concentration of spike added}} \times 100$$

Samples run by method 8021B and reported as volatile aromatics were spiked with a single surrogate standard. Surrogate recoveries for groundwater, surface water and sediment were all within the required control limits.

2.5 Holding Time

Holding time is the storage time allowed between sample collection and sample analysis when the designated preservation and storage techniques are employed.

All groundwater, surface water and sediment samples were analyzed within required holding times for all methods of analysis.

2.6 Temperature

Chain of custody forms and cooler receipts document that the laboratory received all samples at temperatures ranging from 1 ^{o}C to 6 ^{o}C. These temperatures are within the acceptable limits of the required preservation requirement of 4 ^{o}C plus or minus 2 ^{o}C.

2.7 Completeness

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness.

3.0 DATA VALIDATION

The objective when evaluating the quality of chemical data is to determine its usability. The evaluation is based upon the interpretation of the laboratory QC data, the field QC data, and the project Data Quality Objectives (DQOs). The evaluation process is often termed "data validation".

3.1 Laboratory Data Validation

Laboratory data were evaluated to assess, holding times, laboratory blanks, laboratory control samples, surrogate recoveries, and matrix spike/matrix spike duplicate (MS/MSD) relative percent differences (RPDs). These criteria were used to evaluate the bias and precision of the data generated by the laboratory. The bias of the laboratory data was assessed through consideration of the following:

- Adherence to the prescribed method
- Recovery of MS/MSD from field samples
- Method blank contamination
- Adherence to sample preparation and holding times
- Recovery of surrogate spikes
- Field duplicate precision

3.2 Definition of Data Qualifiers

During the data validation process, all laboratory data had to be evaluated and assigned a data qualifier, as applicable. These qualifiers are defined in the February 1994 EPA documents titled, "National Functional Guidelines for Organic and Inorganic Data Review." The guidance also describes procedures to be followed when qualifying data. The data qualifiers are defined as follows:

U = the compound was analyzed for, but was not detected above the level of the associated value
J = the associated value is an estimated quantity. The reported result is qualitatively accurate but quantitatively imprecise.
UJ = the compound was analyzed for, but was not detected, and the associated value is an estimated value due to a variance from quality control limits.
R = the reported result or quantitation limit is rejected and unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte can not be verified

Data qualifier flags were not assigned to data that were totally in compliance with Quality Control requirements.

For organic data, specifically VOCs, the positive and undetected (U) results were qualified as estimated (J/UJ) if one surrogate compound was detected outside acceptable recovery limits and/or the recovery was greater than 10 percent. If the recoveries of one surrogate compound were less than 10 percent, then the positive results were qualified as estimated (J) and the undetected results were rejected (R). Results of PAH compounds are validated in the same manner as VOC, the qualifiers are applied to results with one or more surrogate compounds detected outside the acceptable recovery limits.

3.3 Qualified Results

Groundwater and Surface water:

PAHs - Acenaphthene and Benzo(a)anthracene were qualified as estimated (J), due to low matrix spike recoveries for samples; 728MW01, 728MW06, 728MW11, 728MW60, 728MW61, 728MW63, 728MW64, 728MW65, 728SWE01 and 710MW02.

Sediment:

PAHs - All detects were qualified as estimated (J), due to low matrix spike recoveries for sample; 728SWE03.

VOCs - Toluene was qualified as estimated (J), for due to high matrix spike recovery for sample; 728SWE03.

4.0 PROBLEMS ENCOUNTERED

Any problems encountered during sample analysis for this investigation are described in detail below. Analytical data that did not meet the QC requirements were qualified as stated in **Section 3.3**.

4.1 Holding Times

No problems were present regarding hold times.

4.2 Surrogate Recovery

Samples run by method 8021B and reported as volatile aromatics were spiked with a single surrogate standard. No other problems were encountered.

4.3 Precision (% RPD)

No problems were encountered outside of a few field duplicate outliers. No qualifiers were applied.

4.4 Field Duplicates

In addition to the matrix spike sample, field duplicates were collected to assess sampling precision. Duplicate samples were collected at a frequency of one per site, per matrix, per sampling event. Field duplicate RPDs were within the quality control limits for 95% of the parameters analyzed. Sample duplicate precision is indicative that these data are comparable and representative of field conditions.

4.5 Equipment Rinsates

One equipment rinsate was analyzed in with this set of groundwater and surface water samples. The rinsate blank was found to be free of contamination.

4.6 Laboratory Blanks

Laboratory blanks were within the specified method criteria and the sample results required no qualifications with the exception of the samples mentioned under **Section 3.3**.

4.7 Laboratory Control Standards

Laboratory control standards were within the specified method criteria and the sample results required no qualifications with the exception of the samples mentioned under **Section 3.3**.

5.0 SUMMARY OF DATA QUALITY

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness. The results of the data validation indicate the quality of the data is within QC limits and is acceptable to verify or deny any contamination present in the groundwater at this site.

Reviewed by: _____

Date: 3/24/99

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS

CONSTITUENT (Units in ug/l)	SITE	728MW01	728MW06	728MW11	728MW60	728MW61	728MW63
	SAMPLE ID	728-MW0104	728-MW0604	728-MW1104	728-MW6004	728-MW6104	728-MW6304
	DATE	02/17/99	02/17/99	02/17/99	02/17/99	02/17/99	02/17/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Benzene		<0.5	9.3	56	3300	280	990
Toluene		<0.5	3.9	2.0	230	<5.0	120
Ethylbenzene		<0.5	14	9.8	630	130	130
Xylene (total)		<1.0	<1.0	62	2700	540	40
Chlorobenzene		<0.5	<0.5	<0.5	<13	<5.0	<5.0
1,2-Dichlorobenzene		<0.5	<0.5	<0.5	<13	<5.0	<5.0
1,3-Dichlorobenzene		<0.5	<0.5	<0.5	<13	<5.0	<5.0
1,4-Dichlorobenzene		<0.5	<0.5	<0.5	<13	<5.0	<5.0
		---	---	---	---	---	---
Acenaphthene		<0.302 J	<0.302 J	<0.302 J	<0.302 J	<0.302 J	<0.302 J
Acenaphthylene		<0.164	7.3	1.1	<0.164	<0.164	7.3
Anthracene		<0.097	<0.097	<0.097	<0.097	<0.097	<0.097
Benzo(a)anthracene		<0.0311 J	<0.0311 J	<0.0311 J	<0.0311 J	<0.0311 J	<0.0311 J
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Chrysene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031	<0.031	<0.031	<0.031	<0.031
Fluoranthene		<0.123	<0.123	<0.123	<0.123	<0.123	<0.123
Fluorene		<0.092	1.8	<0.092	1.6	0.44	<0.092
Indeno(1,2,3-cd)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Naphthalene		<0.214	<0.214	<0.214	<0.214	<0.214	<0.214
Phenanthrene		<0.103	2.4	<0.103	<0.103	0.60	<0.103
Pyrene		<0.107	<0.107	<0.107	<0.107	<0.107	<0.107

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL 8000ABASI J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS

CONSTITUENT (Units in ug/l)	SITE	728MW64	728MW64	728MW65	728SWE01	728SWE03	728SWE03
	SAMPLE ID	728-MW6404	728-MW8004	728-MW6504	728-SW0104	728-SW0304	728-SW1004
	DATE	02/17/99	02/17/99	02/17/99	02/17/99	02/17/99	02/17/99
	RESULT TYPE	Primary	Duplicate 1	Primary	Primary	Primary	Duplicate 1
Benzene		290	310	<0.5	2.5	2.1	1.9
Toluene		560	590	<0.5	1.4	0.59	<0.5
Ethylbenzene		190	210	<0.5	<0.5	<0.5	<0.5
Xylene (total)		1400	1500	<1.0	4.7	4.9	<1.0
Chlorobenzene		<2.5	<2.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene		<2.5	<2.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene		<2.5	<2.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene		<2.5	<2.5	<0.5	<0.5	<0.5	<0.5
		---	---	---	---	---	---
Acenaphthene		<0.302 J	<0.302 J	<0.302 J	<0.302 J	<0.302	<0.302
Acenaphthylene		15	16	<0.164	<0.164	<0.164	<0.164
Anthracene		<0.097	<0.097	<0.097	<0.097	<0.097	<0.097
Benzo(a)anthracene		<0.0311 J	<0.0311 J	<0.0311 J	<0.0311 J	<0.0311	<0.0311
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	0.08
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Chrysene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	0.07
Dibenz(a,h)anthracene		<0.031	<0.031	<0.031	<0.031	<0.031	<0.031
Fluoranthene		<0.123	<0.123	<0.123	<0.123	<0.123	<0.123
Fluorene		<0.092	<0.092	<0.092	<0.092	<0.092	<0.092
Indeno(1,2,3-cd)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Naphthalene		<0.214	<0.214	<0.214	0.79 J	0.40	<0.214
Phenanthrene		<0.103	<0.103	<0.103	<0.103	<0.103	<0.103
Pyrene		<0.107	<0.107	<0.107	<0.107	<0.107	<0.107

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL 800(.SI RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
PRIMARY RESULTS
BUILDING 728

CONSTITUENT (Units in mg/kg)	SITE	728SWE03	728SWE03
	SAMPLE ID	728-SE0304	728-SE1004
	DATE	02/17/99	02/17/99
	DEPTH (ft)	0.00	0.00
	RESULT TYPE	Primary	Duplicate 1
Benzene		<0.0029	<0.0035
Toluene		0.0040 J	0.0066 J
Ethyl benzene		<0.0029	<0.0035
Xylene (total)		<0.0029	<0.0035
		---	---
Acenaphthene		<0.24	<0.30
Acenaphthylene		<0.24	<0.30
Anthracene		<0.24	<0.30
Benzo(a)anthracene		0.81 J	1.3 J
Benzo(a)pyrene		0.27 J	0.54 J
Benzo(b)fluoranthene		0.48 J	0.91 J
Benzo(ghi)perylene		0.25 J	<0.30
Benzo(k)fluoranthene		0.48 J	0.91 J
Chrysene		0.55 J	0.53 J
Dibenzo(a,h)anthracene		<0.24	<0.30
Fluoranthene		1.1 J	1.3 J
Fluorene		<0.24	<0.30
Indeno(1,2,3-cd)pyrene		<0.24	<0.30
Naphthalene		<0.24	<0.30
Phenanthrene		0.90 J	0.81 J
Pyrene		1.1 J	1.4 J
		---	---
Diesel Range Organics		72 J	70 J
Gasoline Range Organics		0.34	<0.35

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

For RCL 8000AJASI

ASI #04778

1 2 of 2

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter LTM

PROJECT NO: 021974-4103

LABORATORY ID: ASI

SAMPLER(S) NAME: D Howard / G Rowell

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: David Howard / G Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F)FIELD	ANALYTICAL PARAMETERS/METHODS: VOCs abc	SVOC PAH abe	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB PAH e	TPH/DRO	GRO/VOC abc d	DRO f
										Method No. 8021	8310				8100		8260B	8015B
2/17/99	0915	W	728-TB03	7285WE03	BT11		3	Y	—	3									1
	0930	W	728-SW0304	7285WE03	PP01		5	Y	—	3	2								2
	0930	W	728-SW1004	7285WE03	PD11		5	Y	—	3	2								3
	0930	DIT NS	728-SE0304	7285WE03	PP01		6	N	—						1		4	1	4
	0930	DIT NS	728-SE0304 MS/MSD	7285WE03	SL11			N	—	-5MS, -6MSD					DH 21		7	DH 1X	
	0930	DIT NS	728-SE1004	7285WE03	PD11		6	N	—						1		4	1	7
	1045	W	728-SW0104	7285WE01	PP01		5	Y	—	3	2								8
	1130	W	728-EB01	728MW01	BR11		3	Y	—	3									9
	1135	W	728-MW0104	728MW01	PP01		3	Y	—	3									10
	1155	W	728-MW6004	728MW60	PP01		3	Y	—	3									11
	1200	W	728-MW6104	728MW61	PP01		3	Y	—	3									12
↓	1405	W	728-MW6304	728MW63	PP01		3	Y		3									13

Relinquished by: (Signature) David Howard — Date/Time: 2/17/99/1900 — Received by: Wm. Ryan Dix — Date/Time: 2/18/99 09:15

Cooler Temperature: Temp Blank = 2°C (09:40) Inside = 3°C (09:40)

Remarks: 173 total containers G Rowell 2/18/99 bagged ice; seal intact; temp <6°C; pH=n/a

AIRBILL CO. Fed Ex

TRACKING NO: 807146292394

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SI) IN ICE Y/N

ASI#104778

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter LTM

PROJECT NO: 021974-4103

LABORATORY ID: ASI

SAMPLER(S) NAME: D Howard / G Rowell

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard / G Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV (Y/N)*	FILTERED (L) LAB (F) FIELD	ANALYTICAL PARAMETERS/METHODS: VOCS abc	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.										8021	8310							
2/17/99	1415	W	728-MW6404	728MW64	PP01		3	Y	—	3								-1
	1415	W	728-MW8004	728MW8064	PD11		3	Y	—	3								-2
	1450	W	728-MW6504	728MW65	PP01		3	Y	—	3								-10
	~~1505~~ 1505 DH	W	728-MW1104	728MW11	PP01		3	Y	—	3								-11
	1525	W	728-MW0604	728MW06	PP01		3	Y	—	3								-18
	1525	W	728-MW0604 MS/MSD	728MW06	SL11		6	Y	—	6			19 MS, -20 MSD					
	1750	W	710-MW0113	710MW01	PP01		3	Y	—	3							-21	
	1800	W	710-MW0213	710MW02	PP01		3	Y	—	3							-22	
↓	—	W	TEMP	Blank			1											

Relinquished by: (Signature) Daniel Howard — Date/Time: 2/17/99/1900 — Received by: Wm. Ryan — Date/Time: 2/18/99 09:15

Cooler Temperature: Temp Blank = 2°C Inside = 3°

Remarks: J. Mueller 2/18/99 bagged ice; seal intact; pH = n/a

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. FedEx

TRACKING NO:

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____
STORED/SHIPPED IN ICE (Y)/N

ASI# 104778

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter LTM

PROJECT NO: 021974-4103

LABORATORY ID: ASI

SAMPLER(S) NAME: D Howard / G Rowell

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: David Howard/G Rowell

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
											de							
Method No.											8310							
2/17/99	1415	W	728-MW6404	728MW64	PP01		2	N	—		2						-14	
	1415	W	728-MW8004	728MW64	PD11		2	N	—		2						-15	
	1450	W	728-MW6504	728MW65	PP01		2	N	—		2						-16	
	1505	W	728-MW1104	728MW11	PP01		2	N	—		2						-17	
	1525	W	728-MW0604	728MW06	PP01		2	N	—		2						-18	
↓	—	W	TEMP	Blank			1											

Relinquished by: (Signature) David Howard — Date/Time: 2/17/99/1900 — Received by: — Date/Time: 2/18/99 09:15

Cooler Temperature: INSIDE = 6°C (09:45) TEMP BLANK = 2 (09:47)

Remarks: bagged ice; contact; pH = n/a

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. FedEx

TRACKING NO: 807146292409

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/ ED IN ICE (Y) N

ASI# 104448

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter LTM
PROJECT NO: 021974-4103
LABORATORY ID: ASI
SAMPLER(S) NAME: D Howard / G Rowell
TASK ORDER NO.
SAMPLE EVENT:
PROGRAM TYPE:
SAMPLER(S) SIGNATURE: Daniel Howard / G Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F)FIELD	VOCS	PAH (8310)	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
2/17/99	1525	W	728-MW0604 MS/MSD	728MW06	SL11		4	N	—		4				-19MS, -20MSD			
↓	1750	W	710MW0113	710MW01	PP01		2	N	—		2						-21	
↓	1800	W	710-MW0213	710MW02	PP01		2	N	—		2						-22	
↓	—	W	TEMP	Blank			1											

Relinquished by: (Signature) Daniel Howard
Date/Time: 2/17/99/1900
Received by: [signature]
Date/Time: 2/18/99 09:15

Cooler Temperature: TEMP BLANK = 1°C (09:49) INSIDE = 3°C (09:51)

Remarks: [signature] 2/18/99 bags/ice; seal intact; pH = n/a

Send Results to:
Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. Fed Ex
TRACKING NO: 807146292383

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y)/N

ASI # 104778

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter LTM

PROJECT NO: 021974-4103

LABORATORY ID: ASI

SAMPLER(S) NAME: D Howard / G Rowell

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard / G Rowell

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC PAH Hde	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.											8310							
2/17/99	1130	W	728-EB01	728MW01	BR11		2	N	—		2						-9	
↓	1135	W	728-MW0104	728MW01	PP01		2	N	—		2						-10	
↓	1155	W	728-MW6004	728MW60	PP01		2	N	—		2						-11	
↓	1200	W	728-MW6104	728MW61	PP01		2	N	—		2						-12	
↓	1405	W	728-MW6304	728MW63	PP01		2	N	—		2						-13	
↓	—	W	TEMP	Blank			1											

Relinquished by: (Signature) Daniel Howard

Date/Time: 2/17/99/1900

Received by: [illegible]

Date/Time: 2/18/99 0915

Cooler Temperature: TEMP BLANK = 1°C (09:56) INSIDE = 3°C (09:58)

Remarks: [illegible] 2/18/99 [illegible]; [illegible]; pH = n/a

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
[illegible]4) 881-8010, FAX (404) 872-3161

AIRBILL CO. FedEx

TRACKING NO: 807146292372

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER ______

STORED/S[illegible]D IN ICE (Y) N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative: C. Hettinger
FAX #: (404) 872-3161
SUBCONTRACTOR: ASI
PROJECT #: Hunter LTM
SAMPLE CUSTODIAN: Ryan Diver
TODAY'S DATE: 2/18/99
DATE/TIME SAMPLES RECEIVED: 2/18/99 9:15
AIRBILL NUMBER: 807 146 292 394
NO. OF COOLERS IN SHIPMENT: 6
COOLER OPENED: DATE 2/18/99 TIME 9:40

CHAIN OF CUSTODY SEAL INTACT?	YES ☑	NO ☐
CHAIN OF CUSTODY PROVIDED?	YES ☑	NO ☐
SAMPLE LABELS PRESENT?	YES ☑	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☑	NO ☐

TYPE OF COLLANT USED: BAGGED ICE
COOLANT CONDITION: MELTED ____ PARTIALLY MELTED/FROZEN X
FROZEN ____

COOLER NUMBER #	TEMP INSIDE COOLER
1400 (cooler #1)	3°C
#	
#	
#	
#	

RECORD TEMPERATURE BLANK (1) 2°C (2) ____ (3) ____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: 728-TB03, 728-SW0304, 728-SW1004, 728-SE0304 728-SE0304 MS/MSD, 728-SE1004, 728-SW0104, 728-CB01, 728-MW0104, 728-MW6004, 728-MW6104, 728-MW6304, 728-MW6404, 728-MW8004 728-MW6504, 728-MW1104, 728-MW0604, 728-MW0604 MS/MSD 710-MW0113, 710-MW0213, TEMP BLANK

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative: C. Hettinger
FAX #: (404) 872-3161
SUBCONTRACTOR: ASI
PROJECT #: Hunter LTM
SAMPLE CUSTODIAN: Ryan Oliver
TODAY'S DATE: 2/18/99
DATE/TIME SAMPLES RECEIVED: 2/18/99 09:15
AIRBILL NUMBER: 807 146 292 409
NO. OF COOLERS IN SHIPMENT: 6
COOLER OPENED: DATE 2/18/99 TIME 9145

CHAIN OF CUSTODY SEAL INTACT?	YES ☑	NO ☐
CHAIN OF CUSTODY PROVIDED?	YES ☑	NO ☐
SAMPLE LABELS PRESENT?	YES ☑	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☑	NO ☐

TYPE OF COLLANT USED: Bagged Ice
COOLANT CONDITION: MELTED ____ PARTIALLY MELTED/FROZEN X FROZEN ____

COOLER NUMBER #	TEMP INSIDE COOLER
1685 (cooler #3)	6°C
#	
#	
#	
#	

RECORD TEMPERATURE BLANK (1) 2°C (2) ____ (3) ____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: 728-MW6404, 728-MW8004, 728-MW6504, 728-MW4104, 728-MW0604, TEMP BLANK

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger
FAX # (404) 872-3161
SUBCONTRACTOR ASI
PROJECT # Hunter LTM
SAMPLE CUSTODIAN Ryan Diver
TODAY'S DATE 2/18/99
DATE/TIME SAMPLES RECEIVED 2/18/99 09:15
AIRBILL NUMBER 807 146 292 383
NO. OF COOLERS IN SHIPMENT 6
COOLER OPENED: DATE 2/18/99 TIME 9:49

CHAIN OF CUSTODY SEAL INTACT?	YES ☑	NO ☐
CHAIN OF CUSTODY PROVIDED?	YES ☑	NO ☐
SAMPLE LABELS PRESENT?	YES ☒	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☒	NO ☐

TYPE OF COLLANT USED Bagged Ice
COOLANT CONDITION: MELTED ____ PARTIALLY MELTED/FROZEN X
FROZEN ____

COOLER NUMBER #	TEMP INSIDE COOLER
1684 (Cooler #4)	3°C
#	
#	
#	
#	

RECORD TEMPERATURE BLANK (1) 1°C (2) ____ (3) ____
CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)
IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED
LIST SAMPLE ID'S IN EACH SHIPMENT: 728-MW0604 MS/MSD, 710-MW0113, 710-MW07
TEMP BLANK

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT

METCALF & EDDY Representative: C. Hettinger — FAX #: (404) 872-3161

SUBCONTRACTOR: ASI — PROJECT #: Hunter LTM

SAMPLE CUSTODIAN: Ryan Diver — TODAY'S DATE: 2/18/99

DATE/TIME SAMPLES RECEIVED: 2/18/99 05:15

AIRBILL NUMBER: 807146 292 372 — NO. OF COOLERS IN SHIPMENT: 6

COOLER OPENED: DATE 2/18/99 TIME 9:56

CHAIN OF CUSTODY SEAL INTACT?	YES ☑	NO ☐
CHAIN OF CUSTODY PROVIDED?	YES ☑	NO ☐
SAMPLE LABELS PRESENT?	YES ☑	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☑	NO ☐

TYPE OF COLLANT USED: Bagged Ice

COOLANT CONDITION: MELTED ____ PARTIALLY MELTED/FROZEN X

FROZEN ____

COOLER NUMBER #	TEMP INSIDE COOLER
1689 (cooler #5)	3°C
#	
#	
#	
#	

RECORD TEMPERATURE BLANK (1) 1°C (2) ____ (3) ____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: 728-EB01, 728-MW0104, 728-MW6004, 728-MW6104, 728-MW6304, Temp Blank

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell / D. Howard

WELL ID: 728-MW1

PROJECT NAME: HAAF 3rd Qtr Sampling

LOCATION: B. 728

Date sampled: 2-17-99 Time start 1110 End 1140

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 3.28 ft

3. Depth of well from T.O.C. 13.2 ft

4. Feet of standing water (h) 9.92 ft

1. Standing water (gal.) = 1.7

2. X 3 well volumes

3. = 5.1 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](9.92 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.7 \text{ gal}$

		pH	Conductivity	Temperature, ~~(F)~~ C
1. Well volume = 1.7	gal.	6.15	220	18.3
2. Well volume = 3.4	gal.	6.52	225	18.4
3. Well volume = 5.1	gal.	6.18	217	18.4
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor:

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Powell / D. Howard

WELL ID: 728-MW6

PROJECT NAME: HAAF 3rd Qtr Sampling

LOCATION: B.728

Date sampled: 2-17-99 Time start 1514 End 1525

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 4.83 ft
3. Depth of well from T.O.C. 12.9 ft
4. Feet of standing water (h) 8.07 ft

1. Standing water (gal.) = 1.4
2. X 3 well volumes
3. = 4.2 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](8.07 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.4 \text{ gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.4 gal.	6.12	687	20.0
2.Well volume =	2.8 gal.	6.19	598	20.0
3.Well volume =	4.2 gal.	6.33	613	20.3
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor: Petroleum

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Powell / D. Howard

WELL ID: 728-MW11

PROJECT NAME: HAAF 3rd Qtr Sampling

LOCATION: B. 728

Date sampled: 2-17-99 Time start 1440 End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 6.22 ft

3. Depth of well from T.O.C. 12.3 ft

4. Feet of standing water (h) 6.08 ft

1. Standing water (gal.) = 1.0

2. X 3 well volumes

3. = 3.0 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.08 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.0 \text{ gal}$

		pH	Conductivity	Temperature, (F) C
1. Well volume = 1.0	gal.	DH ~~6.15~~ 5.72	81.6 ~~220~~	19.8 ~~19.3~~
2. Well volume = 2.0	gal.	DH ~~6.52~~ 5.65	77.6	19.2
3. Well volume = 3.0	gal.	DH ~~6.18~~ 5.52	68.6	19.0
4. Well volume =	gal.	~~5.5~~ DH		
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: _____

Color: _____

Appearance: _____

Weather Conditions: _____

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: _____ ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rexrod / D. Howard WELL ID: 728-MW60

PROJECT NAME: HAAF 3rd Qtr Sampling LOCATION: B. 728

Date sampled: 2-17-99 Time start 1145 End 1155 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.61 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) 6.39 ft

1. Standing water (gal.) = 1.1
2. X 3 well volumes
3. = 3.3 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.39 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.1 \text{ gal}$

		pH	Conductivity	Temperature, (F) C
1. Well volume =	1.1 gal.	5.82	209	20.0
2. Well volume =	2.2 gal.	5.81	239	19.9
3. Well volume =	3.3 gal.	5.89	218	18.8
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation -

Sample Description

Odor:

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell / D. Howard

WELL ID: 728-MW61

PROJECT NAME: HAAF 3rd Qtr Sampling

LOCATION: B.728

Date sampled: 2-17-99 Time start 1145 End 1200

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 6.67 ft

3. Depth of well from T.O.C. 13.0 ft

4. Feet of standing water (h) 6.33 ft

1. Standing water (gal.) = 1.1

2. X 3 well volumes

3. = 3.3 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:

Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.33 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.1 \text{ gal}$

		pH	Conductivity	Temperature, (C)
1. Well volume = 1.1	gal.	5.63	126	19.7
2. Well volume = 2.2	gal.	5.97	123	19.3
3. Well volume = 3.3	gal.	5.62	118	19.3
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor:

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Roswell / D. Howland

WELL ID: 728-MW63

PROJECT NAME: HAAF 3rd Qtr Sampling

LOCATION: B.728

Date sampled: 2-17-99 Time start 1350 End 1405

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.87 ft
3. Depth of well from T.O.C. 14.0 ft
4. Feet of standing water (h) 7.13 ft

1. Standing water (gal.) = 1.2
2. X 3 well volumes
3. = 3.6 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](7.13 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.2 \text{ gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.2 gal.	5.69	141.8	19.2
2.Well volume =	2.4 gal.	5.69	139.1	19.1
3.Well volume =	3.6 gal.	5.77	139.5	19.5
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor:

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: Ø ppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Rowell / D. Howard

WELL ID: 728-MW64

PROJECT NAME: HAAF 2nd Qtr Sampling

LOCATION: B. 728

Date sampled: 2-17-99 Time start 1350 End 1400 / 1415

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 5.44 ft

3. Depth of well from T.O.C. 13.0 ft

4. Feet of standing water (h) 7.56 ft

1. Standing water (gal.) = 1.3

2. X 3 well volumes

3. = 3.9 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](7.56 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.3 \text{ gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume = 1.3	gal.	5.12	127.8	19.7
2.Well volume = 2.6	gal.	5.34	46.6	19.1
3.Well volume = 3.9	gal.	5.33	43.9	18.9
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor:

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: Øppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: G. Powell / D. Howard

WELL ID: 728-MW65

PROJECT NAME: HAAF 3rd Qtr Sampling

LOCATION: B.728

Date sampled: 2-17-99 Time start 1440 End 1450

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.40 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) 6.60 ft

1. Standing water (gal.) = 1.1
2. X 3 well volumes
3. = 3.3 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](6.60 \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = 1.1 \text{ gal}$

		pH	Conductivity	Temperature, (F) C
1. Well volume =	1.1 gal.	5.82	174.9	20.7
2. Well volume =	2.2 gal.	5.86	158.9	20.5
3. Well volume =	3.3 gal.	5.84	151.2	20.3
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor:

Color:

Appearance:

Weather Conditions:

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

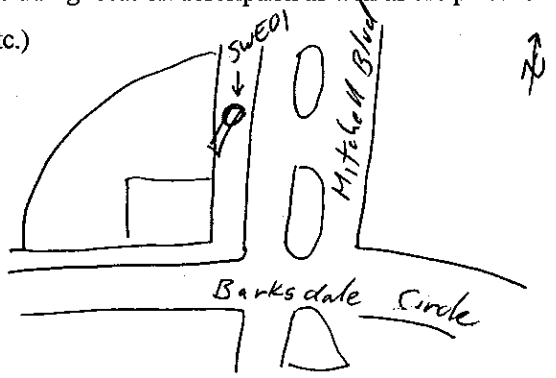
FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

Metcalf & Eddy

Date 2/17/99 Location 728 - SWE01

Samplers Used SS bowl

Drawing of sampling location (including location description as well as the presence of debris, surface sheens, recent excavations, vegetation, etc.)



Weather

Soil/sediment sampling parameters: 8260 (8021) 8100 (8310) 8270 GRO DRO PPM RCRA 8080

Description of sample No sediment - SW only

Time of sample collection 1045

OVA Readings —

Depth of water (for sediment sampling) 2"

Decontamination (page number references) Work plan p A10-2

Spoons or spatulas

Trowel

Hand corer

Hand auger

Bowls ✓

Split spoons

Photograph frame numbers NA

Signature of field team personnel making data entry G. Rowell

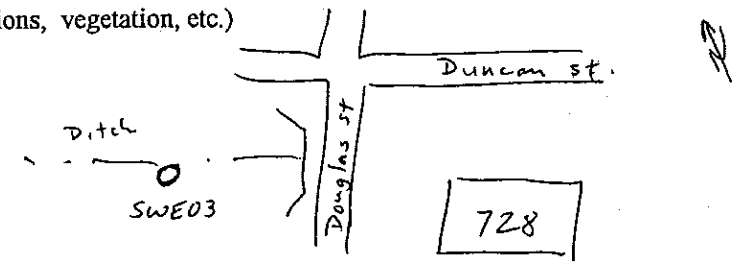
FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

Metcalf & Eddy

Date 2/17/99 Location 728 SWE03

Samplers Used ss bowl, ss spoon, encore

Drawing of sampling location (including location description as well as the presence of debris, surface sheens, recent excavations, vegetation, etc.)



Weather

Soil/sediment sampling parameters: 8260 (8021) 8100 (8310) 8270 (GRO) (DRO) PPM RCRA 8080

Description of sample Lt. Br. Sand

Time of sample collection 0930

OVA Readings —

Depth of water (for sediment sampling) 3"

Decontamination (page number references) Workplan p A10-2

Spoons or spatulas ✓

Trowel

Hand corer

Hand auger

Bowls ✓

Split spoons

Photograph frame numbers —

Signature of field team personnel making data entry G. Rowell

SITE RANKING FORM

Facility Name: Former Building 728 **Ranked by:** G. Rowell
County: Chatham **Facility ID#:** 9025035 and 9025049 **Date Ranked:** 3/19/99

SOIL CONTAMINATION

A. Total PAHs -
Maximum Concentration found on the site (Assume <0.660 mg/kg if only gasoline was stored on site)

- ☐ ≤ 0.660 mg/kg = 0
- ☐ > 0.66 - 1 mg/kg = 10
- ☐ > 1 - 10 mg/kg = 25
- ■ > 10 mg/kg = 50

B. Total Benzene -
Maximum Concentration found on the site

- ☐ ≤ 0.005 mg/kg = 0
- ☐ > 0.005 - .05 mg/kg = 1
- ■ >.05- 1 mg/kg* = 10
- ☐ > 1-10 mg/kg = 25
- ☐ > 10 - 50 mg/kg = 40
- ☐ > 50 mg/kg = 50

C. Depth to Groundwater
(bls = below land surface)

- ☐ > 50' bls = 1
- ☐ > 25'-50' bls = 2
- ☐ > 10'-25' bls = 5
- ■ ≤10 bls = 10

Fill in the blanks: (A. 50) + (B. 10) = (60) x (C. 10) = (D. 600)

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See guidelines for definition of "sheen").

- ☐ No free product = 0
- ☐ Sheen - 1/8" = 250
- ☐ > 1/8" - 6" = 500
- ■ > 6" - 1 ft = 1,000
- ☐ For every additional inch, add another 100 points = 1,000 + _____

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release)

- ☐ ≤ 5 ug/L = 0
- ☐ > 5 - 100 ug/L = 5
- ☐ > 100- 1,000 ug/L = 50
- ■ > 1,000-10,000 ug/L = 100
- ☐ > 10,000 ug/L = 250

Fill in the blanks: (E. 1000) + (F. 100) = (G. 1100)

*Two samples had detection levels <60 mg/kg due to dilutions.

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤ 500'	= 500
☐	> 500' - ¼ mi	= 25
☐	> 1/4 mi – 1 mi	= 10
☐	> 1 mi - 2 mi	= 2
■	> 2 mi	= 0
For lower susceptibility areas only:		
☐	> 1 mi	= 0

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤ 100'	= 500
☐	> 100' - 500'	= 25
☐	> 500' mi - 1/4 mi	= 5
☐	> 1/4 mi - 1/2 mi	= 2
■	> 1/2 mi	= 0
For lower susceptibility areas only:		
☐	> 1/4	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULTS** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table.

☐	Impacted	= 500
■	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
☐	> 1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
■	> 1,000' or no free product	= 0

Fill in the blanks: **=(H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50**

(G. 1100) x (L. 500) = M. 55,000

(M. 55,000) + (D. 600) = N. 55,600

P. SUSCEPTIBILITY AREA MULTIPLIER

☐ If site is located in a low Groundwater Pollution Susceptibility Area - 0.5

■ All other sites = 1

Q. EXPLOSION HAZARD

Have any explosion vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

■ No = 0

Fill in the blanks: **(N. 55,600) x (P. 1) = (L. 55,600) + (Q. 0)**

= 55,600

ENVIRONMENTAL SENSITIVITY SCORE

EXHIBIT D

FOURTH QUARTERLY MONITORING ONLY REPORT

FINAL

FOURTH QUARTERLY MONITORING ONLY REPORT
FOR
FORMER UNDERGROUND STORAGE TANKS #1-#16
FACILITY ID NUMBER 9025035 and 9025049
FORMER BUILDING 728
HUNTER ARMY AIRFIELD, GEORGIA

Prepared for:

U.S. Army Corps of Engineers – Savannah District
and
Fort Stewart Directorate of Public Works
Under Contract Number DACA01-96-D-0020
Delivery Order CV03

Prepared by:

Metcalf & Eddy
Two Sun Court
Suite 200
Norcross, Georgia 30092

July 1999

FINAL FOURTH QUARTERLY MONITORING PROGRESS REPORT
FORMER BUILDING 728
EPD FACILITY NO. 9025035 AND 9025049
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

TABLE OF CONTENTS

MONITORING ONLY REPORT

Submittal Date: July 1999 Monitoring Report Number: 4th Quarterly Sampling

For Period Covering: March 1999 to May 1999

Facility Name: Former Building 728 Street Address: Hunter Army Airfield

Facility ID: 9025035 and 9025049 City: Savannah County: Chatham Zip Code 31409

Latitude: 32° 01' 48" Longitude: 81° 08' 03"

Submitted by UST Owner/Operator:

Name: Mr. Tom Fry

Company: HQs, 3d ID (Mech) & Fort Stewart

Address: 1557 Frank Cochran Drive

City: Fort Stewart State: GA

Zip Code: 31314-4928

Telephone: 912-767-1078

Prepared by Consultant/Contractor:

Name: David Wilderman

Company: Metcalf & Eddy, Inc.

Address: Two Sun Court
Suite 200

City: Norcross State: GA

Zip Code: 30092

Telephone: 678-966-8299

I. REGISTERED PROFESSIONAL ENGINEER OR PROFESSIONAL GEOLOGIST CERTIFICATION

I hereby certify that I have directed and supervised the field work and preparation of this plan, in accordance with State Rules and Regulations. As a registered professional geologist and/or professional engineer, I certify that I am a qualified groundwater professional, as defined by the Georgia State Board of Professional Geologist. All of the information and laboratory data in this plan and in all of the attachments are true, accurate, complete, and in accordance with applicable State Rules and Regulations.

Name: David Humphris

Signature: David Humphris

Date: 7/12/99

Georgia Stamp or Seal

II. PROJECT SUMMARY

(Appendix I, Figure 1: Site Location Map)

Provide a brief description or explanation of the site and a brief chronology of environmental events leading up to this report.

The former Building 728 site consisted of twelve USTs and eight oil/ water separators associated with the former Northern Fuel Battery and four USTs located near the rail spur; south of the fuel battery. The former Building 728 site is located on the northwestern portion of Hunter Army Airfield (HAAF) as illustrated in **Figure 1 (Appendix I)**. A plan view of the former Northern Fuel Battery area is provided on **Figure 2a.** During the 1940s, the tanks held aviation fuel which was pumped via pipelines to fueling pits on the runway. Around 1957, the entire system was converted to store an alcohol/water mixture used as an aircraft de-icer. Later, some of the tanks near former Building 728 were used to store waste oil. The four USTs located directly adjacent to former Building 728 had a capacity of 12,000 gallons. These tanks held aviation fuel and appear to have been part of the fuel hydrant system.

UST removal activities in the former Building 728 area were completed by Anderson Columbia Environmental, Inc. (ACE) in June 1994. A total of 43,140 gallons of hazardous and non-hazardous waste water was disposed of by Industrial Water Services, Inc. A total of 25 tanks (12 JP-4/aviation gas USTs, 4 aviation gas USTs, 8 oil/water separators, 1 water control pit) were removed. During tank removal activities, 2623.91 tons of soil was removed and transported to Laidlaw Environmental Services for incineration. Soil and groundwater samples were collected below the tank excavations in accordance with Georgia EPD UST closure requirements. Contamination in soil and groundwater has been confirmed by the sampling and no free product was encountered during the removal activities.

Metcalf & Eddy completed an initial investigation of the former Building 728 area in September 1995. The findings of the subsurface investigation were summarized in the Final CAP-Part A submitted to the Georgia EPD UST Program in August 1996. A summary of the UST closure activities was also presented in the CAP-Part A. A follow up investigation of the former Building 728 site culminated in the submittal of a CAP-Part B which was submitted to the EPD in December 1997. Free product was detected in monitoring wells MW08, MW59, and MW62. Free product recovery utilized a belt skimmer at well MW08 and absorbent socks (changed monthly) at wells MW59 and MW62. Pending funding for a remediation system recommended in the CAP-Part B, the USACE elected to perform quarterly monitoring to aid in the design of the remediation system. An active remediation pilot study conduced by Science Applications International Company (SAIC) began in May, 1999 and is ongoing. This report documents the fourth quarterly sampling and analytical results.

III. ACTIVITIES AND ASSESSMENT OF EXISTING CONDITIONS

Groundwater table elevations were measured in nineteen of twenty monitoring wells on May 5, 1999 (MW56 was not gauged) in order to determine the direction of groundwater flow. Eight monitoring wells (MW01, MW06, MW11, MW60, MW61, MW63, MW64, and MW65) were selected for sampling by the USACE. These monitoring wells were purged and sampled on May 5, 1999. All samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX - Method 8021) and polynuclear aromatic hydrocarbons (PAHs - Method 8310). Purge water was containerized in drums and stored at the PDO Yard until proper disposal is arranged. Surface water samples were collected from upgradient (SWE-01) and downgradient (SWE-03) of former Building 728. A sediment sample was also collected from the SWE-03 location. No sediment sample could be collected at the upgradient SWE-01 location because sediment was not present in the drainage culvert. The surface water and sediment samples were collected on May 5, 1999. Surface water and sediment were analyzed for BTEX and PAHs as above with the additional sediment analyses of total petroleum hydrocarbons-diesel range organics (DRO) and gasoline range organics (GRO) (both Method 8015M)

A. Potentiometric Data:

Tabulate all data and illustrate last 2 monitoring events findings in Figures 2a and 2b.
(Appendix I, Figure 2a and 2b: Potentiometric Surface Maps)
(Appendix II, Table 1: Groundwater Elevations)

Discuss groundwater flow at this site and implications for this project.

Water levels were measured in nineteen monitoring wells (the two deep wells were not measured) on May 5, 1999. **Table 1 (Appendix II)** lists the wells and water level elevations. Compared to the third quarterly sampling measurements taken on February 16, 1999, water levels are an average of 0.74 feet lower. **Figures 2a** and **2b** show the potentiometric surface map generated from the water levels from the third and fourth quarter sampling, respectively. Groundwater flow is generally to the northwest with a gradient of approximately 0.006 ft/ft. No significant changes were observed in the potentiometric surface, flow direction, or gradient compared to the information presented in the third quarterly monitoring report.

B. Analytical Data:

Tabulate all data for monitoring events findings in Table 2, illustrate last two events findings in Figures 3a and 3b, and graph the trend of contaminant concentration in Figure 4.
(Appendix I, Figure 3a and 3b: Groundwater Quality Maps)
(Appendix I, Figure 4: Trend of Contaminant Concentrations)
(Appendix II, Table 2, 3, and 4: Analytical Results)
(Appendix III, Laboratory Analysis Results)

(Appendix II, Table 2, 3, and 4: Analytical Results)
(Appendix III, Laboratory Analysis Results)

Discuss groundwater analysis results, trend of contaminant concentrations, and implications for this project.

Well sampling began with the well located in the area suspected of least contamination. Protective gloves were worn during sampling and changed between samples. The sampling procedures used were identical to those used in previous sampling episodes (CAP-Part A and B). Samples were shipped via Federal Express overnight to Analytical Services, Inc. (ASI) located in Norcross, Georgia for BTEX and PAH analyses. Analytical results are summarized in **Table 2**.

The eight monitoring wells were sampled on May 5, 1999 for BTEX (Method 8021) and PAHs (Method 8310). The potable well (Hunter 1) was not sampled since monitoring at this location ended with the twelfth quarterly sampling event at former Building 710. Analytical results confirm wells MW06, MW11, MW60, MW61, MW63, and MW64 remain impacted by petroleum hydrocarbons as identified in the previous sampling episodes. Analytical results indicate decreases in benzene and total BTEX concentrations in monitoring wells MW06, MW60, and MW64. No changes were observed at MW01 and MW65 where benzene and total BTEX are below detection limits. The benzene concentrations at MW11, MW60, MW61, MW63, and MW64 exceed the Georgia EPD In-Stream Water Quality Standard (IWQS) of 71.28 µg/L (**Table 2**). **Figure 4** lists the benzene concentrations for each quarter plus a graph of the benzene values over time. **Figures 3a** and **3b** show the concentrations of hydrocarbons in groundwater from the third and fourth quarterly monitoring periods, respectively.

PAHs were detected in monitoring wells MW06, MW11, MW60, MW61, MW63, MW64, and MW65. No PAH constituent detected exceeded the IWQS (0.0311 µg/L for individual compounds) at any well location. The PAHs identified are indicative of a diesel source rather than gasoline.

Surface water results indicate no IWQS exceedences of BTEX compounds (**Table 3**). Benzene was detected at 2.1J µg/L (J = estimated) at SWE01 (upgradient). Benzene was not detected at SWE03 (downgradient). **Figures 3a** and **3b** show the two surface water sampling locations and results. The IWQS of 0.0311 µg/L was exceeded at SWE03 for the following constituents: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Sediment was not observed at SWE01 and was therefore collected only from SWE03. No BTEX compounds were detected. Of the regulated PAHs detected, benzo(a)pyrene, benzo(b)fluoranthene, and chrysene exceeded soil threshold levels (STL) of 0.660 mg/kg. The STLs are listed in Georgia Rule Chapter 391-3-15.09, Table B, less than 500 feet to surface water. DRO and GRO were not detected. All analytical data is presented in **Appendix III**.

IV. SITE RANKING *(NOTE: RE-RANK SITE AFTER EACH MONITORING EVENT)*

(Appendix IV: Site ranking results)

Environmental Site Sensitive Score: 55,600
The Site Ranking Form is presented in **Appendix IV**.

V. CONCLUSIONS/RECOMMENDATIONS

Provide justification of no-further-action-required recommendation or briefly discuss future monitoring plans for this site.

This completes the fourth and final quarter of monitoring at this site under the existing contract. No significant changes in the groundwater flow direction or gradient were observed. Soluble petroleum hydrocarbon constituents continue to impact six monitoring wells. Free product recovery stopped in monitoring wells MW08, MW59, and MW62 in May 1999 due to the ongoing pilot study conducted by SAIC. An Annual Monitoring Report will be submitted under separate cover with recommendations for future monitoring at this site.

VI. REIMBURSEMENT ATTACHED N/A

(Appendix V: Reimbursement Application)

Hunter Army Airfield is a federally owned facility and has funded the "Monitoring Only" activities for UST# 1-16, former Building 728, Facility I.D.# 9025035 and 9025049, using Environmental Restoration Account funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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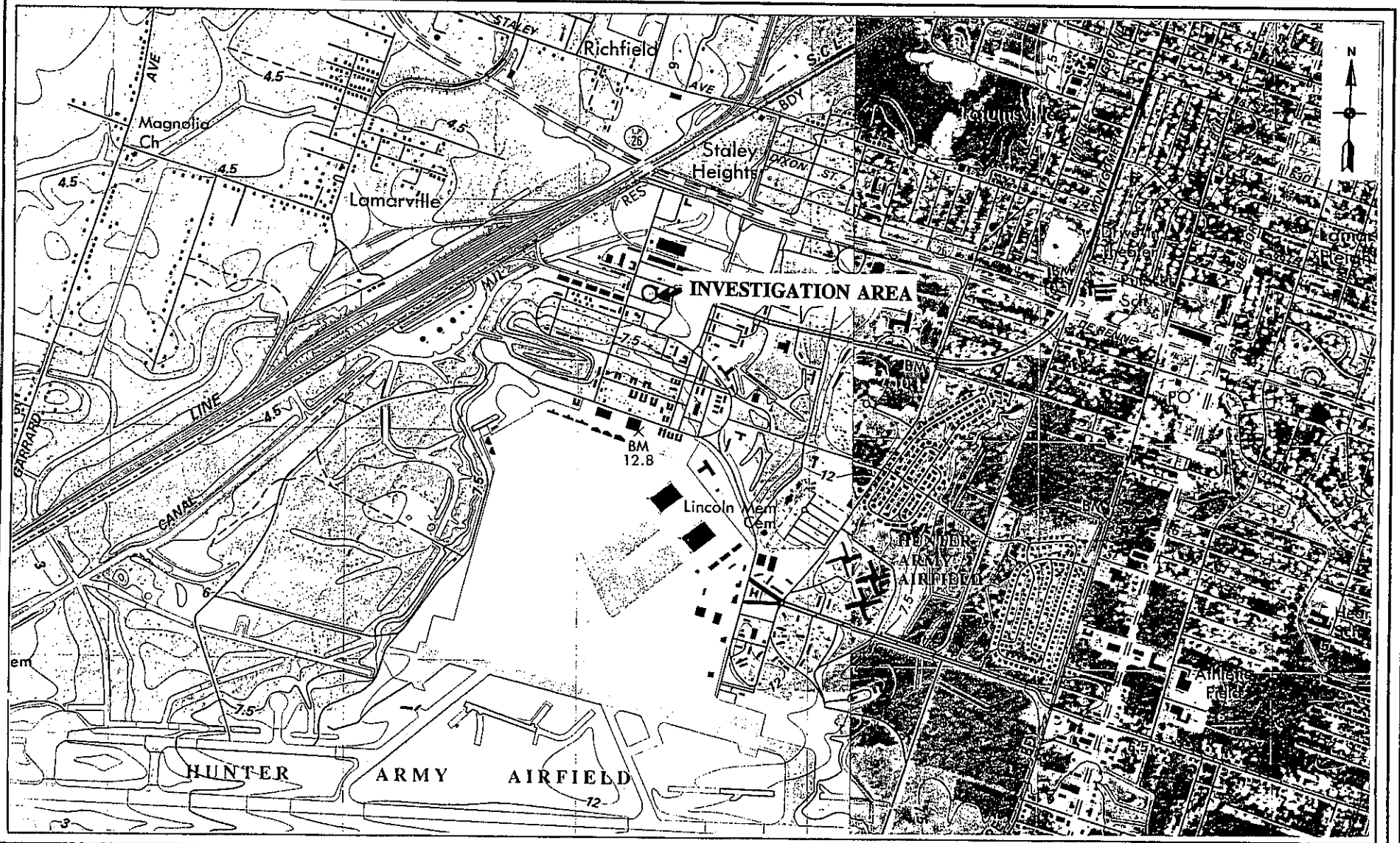
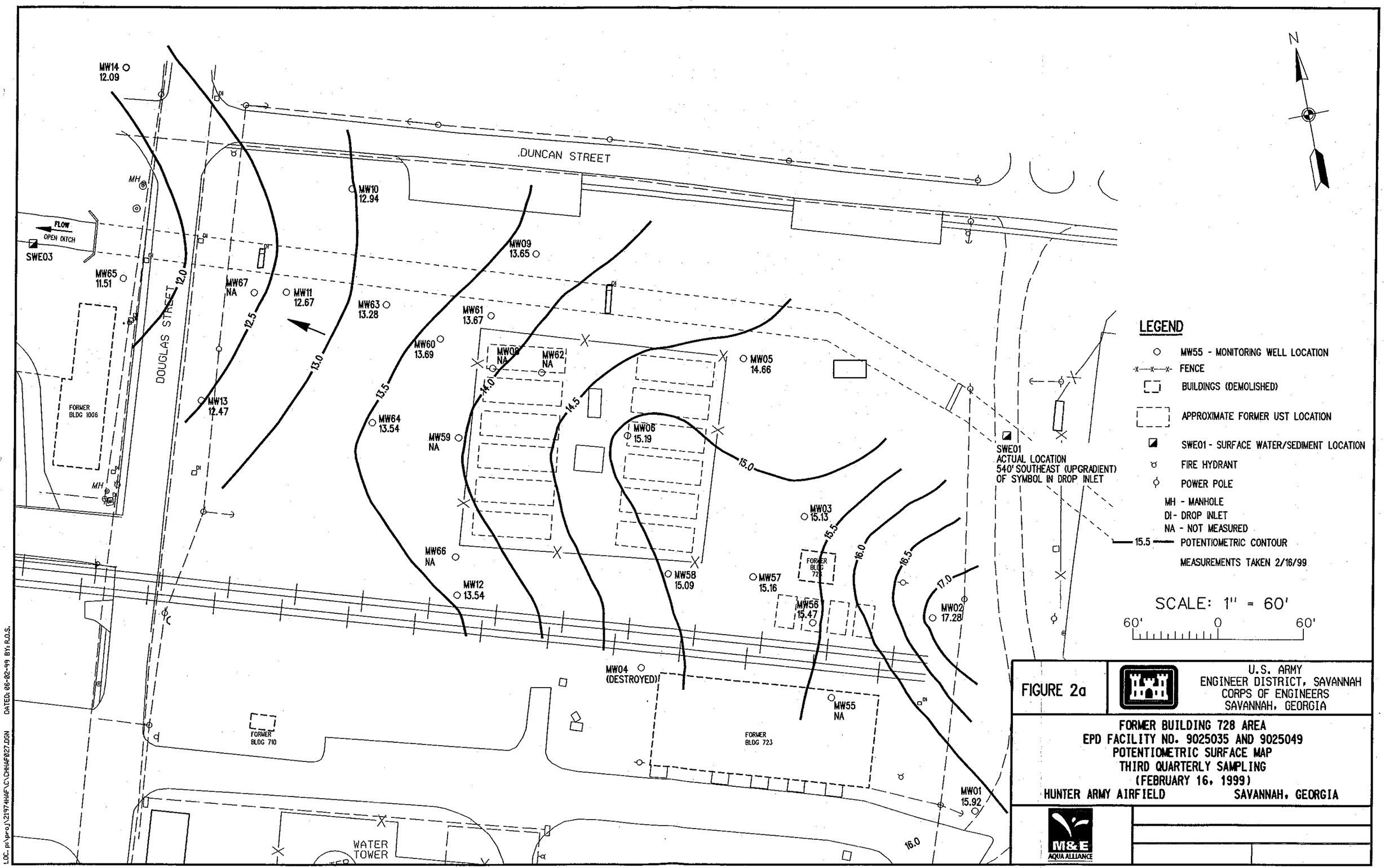
APPENDIX I

FIGURES



METCALF & EDDY	**AIRFIELD LOCATION MAP** **HUNTER army AIRFIELD** SAVANNAH, GEORGIA
SCALE 1:24000 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET	SOURCE: GARDEN CITY AND SAVANNAH, GA USGS QUADRANGLE MAPS, 1978
	FIGURE 1



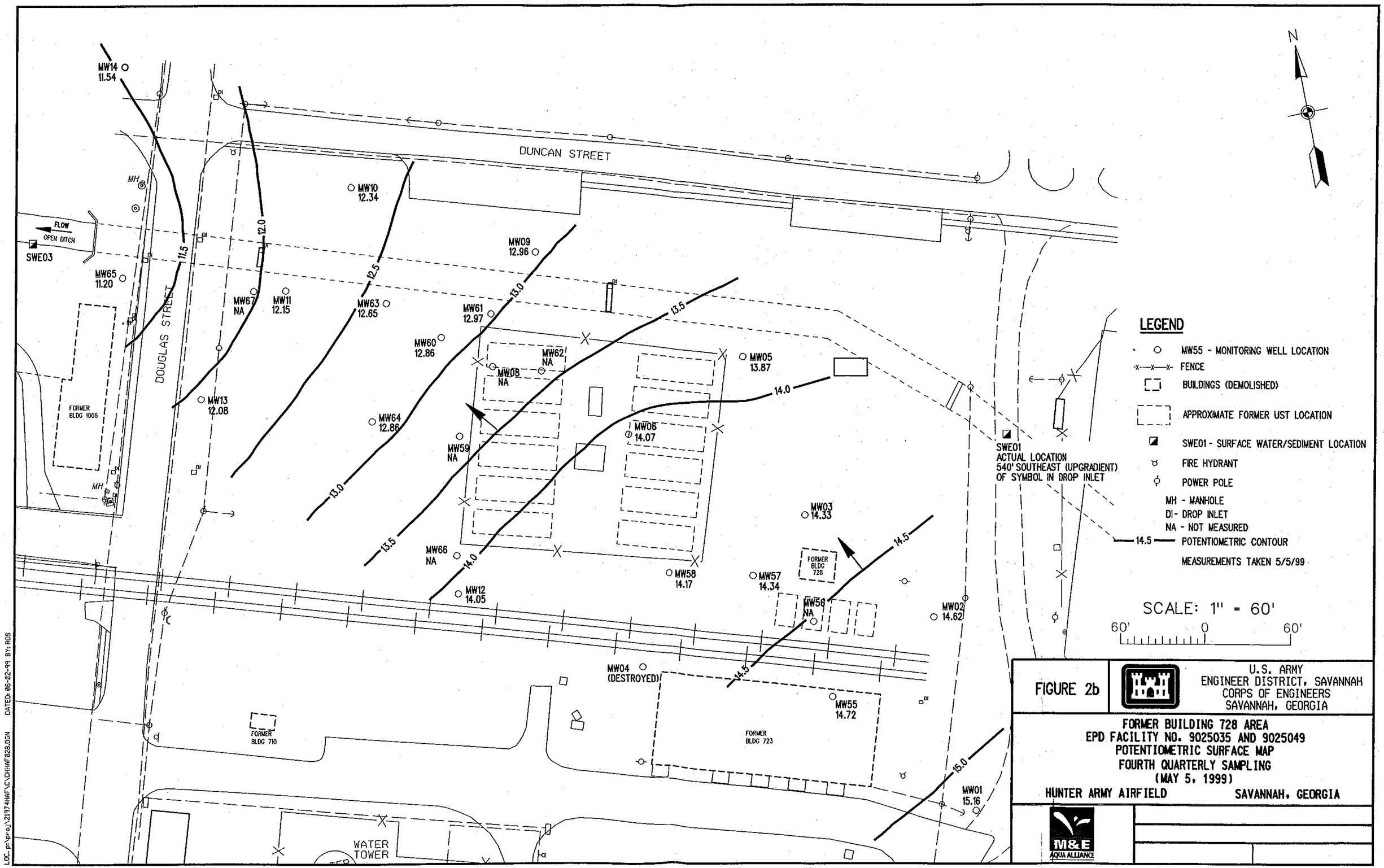
LOC: p:\proj\21974HAF\C\CHAF027.DGN DATED: 06-02-99 BY: R.D.S.

FIGURE 2a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
EPD FACILITY NO. 9025035 AND 9025049
POTENTIOMETRIC SURFACE MAP
THIRD QUARTERLY SAMPLING
(FEBRUARY 16, 1999)
HUNTER army AIRFIELD SAVANNAH, GEORGIA

M&E AQUA ALLIANCE



LOC: p:\proj\21974HAFV\CHHAF028.DGN DATED: 05-02-99 BY: ROS

FIGURE 2b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
EPD FACILITY NO. 9025035 AND 9025049
POTENTIOMETRIC SURFACE MAP
FOURTH QUARTERLY SAMPLING
(MAY 5, 1999)
HUNTER army AIRFIELD SAVANNAH, GEORGIA

M&E AQUA ALLIANCE

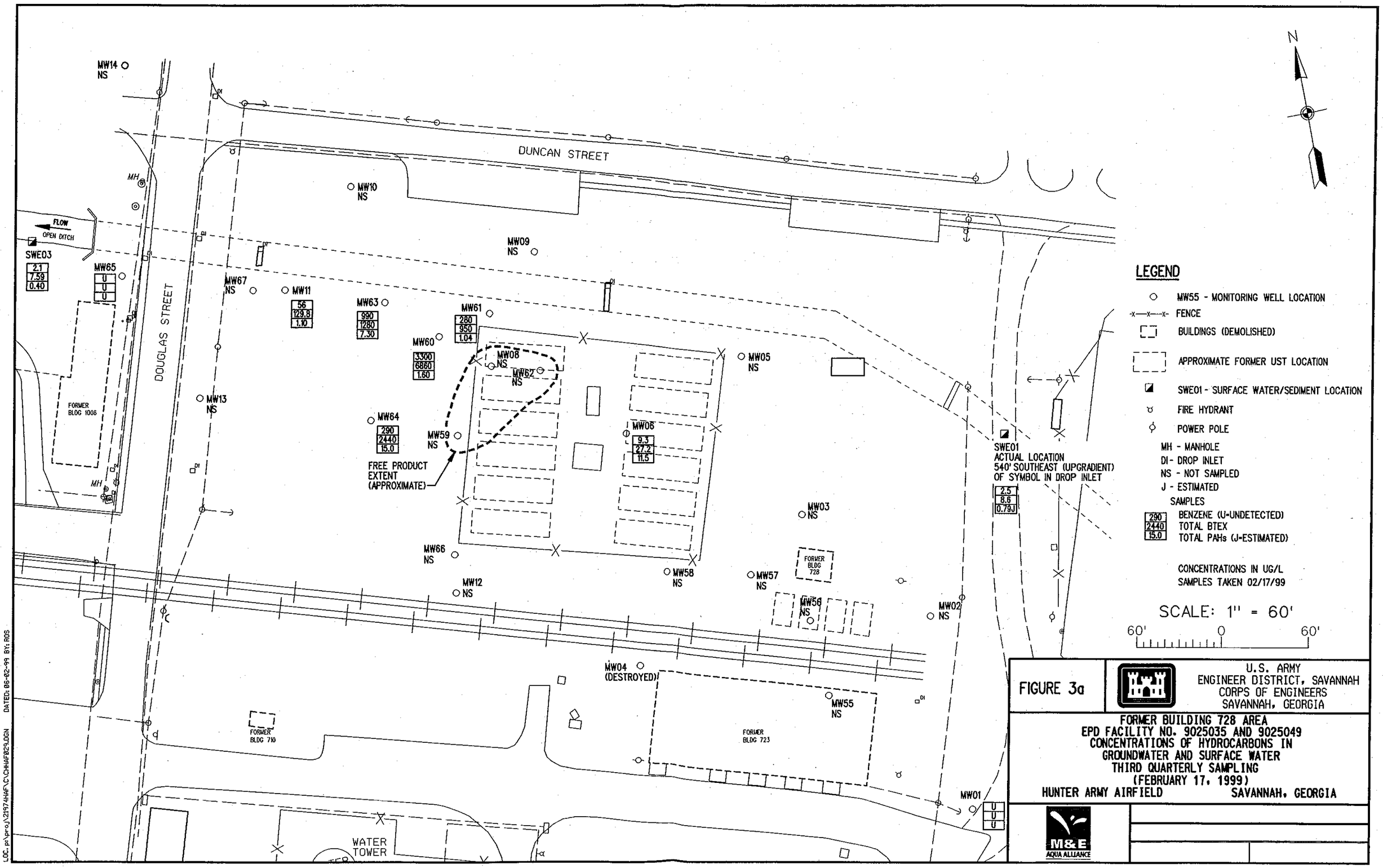


FIGURE 3a

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
EPD FACILITY NO. 9025035 AND 9025049
CONCENTRATIONS OF HYDROCARBONS IN
GROUNDWATER AND SURFACE WATER
THIRD QUARTERLY SAMPLING
(FEBRUARY 17, 1999)
HUNTER army AIRFIELD SAVANNAH, GEORGIA

M&E AQUA ALLIANCE

LOC: p:\proj\21974HAF\C\GHHAF025.DGN DATED: 06-02-99 BY: ROS

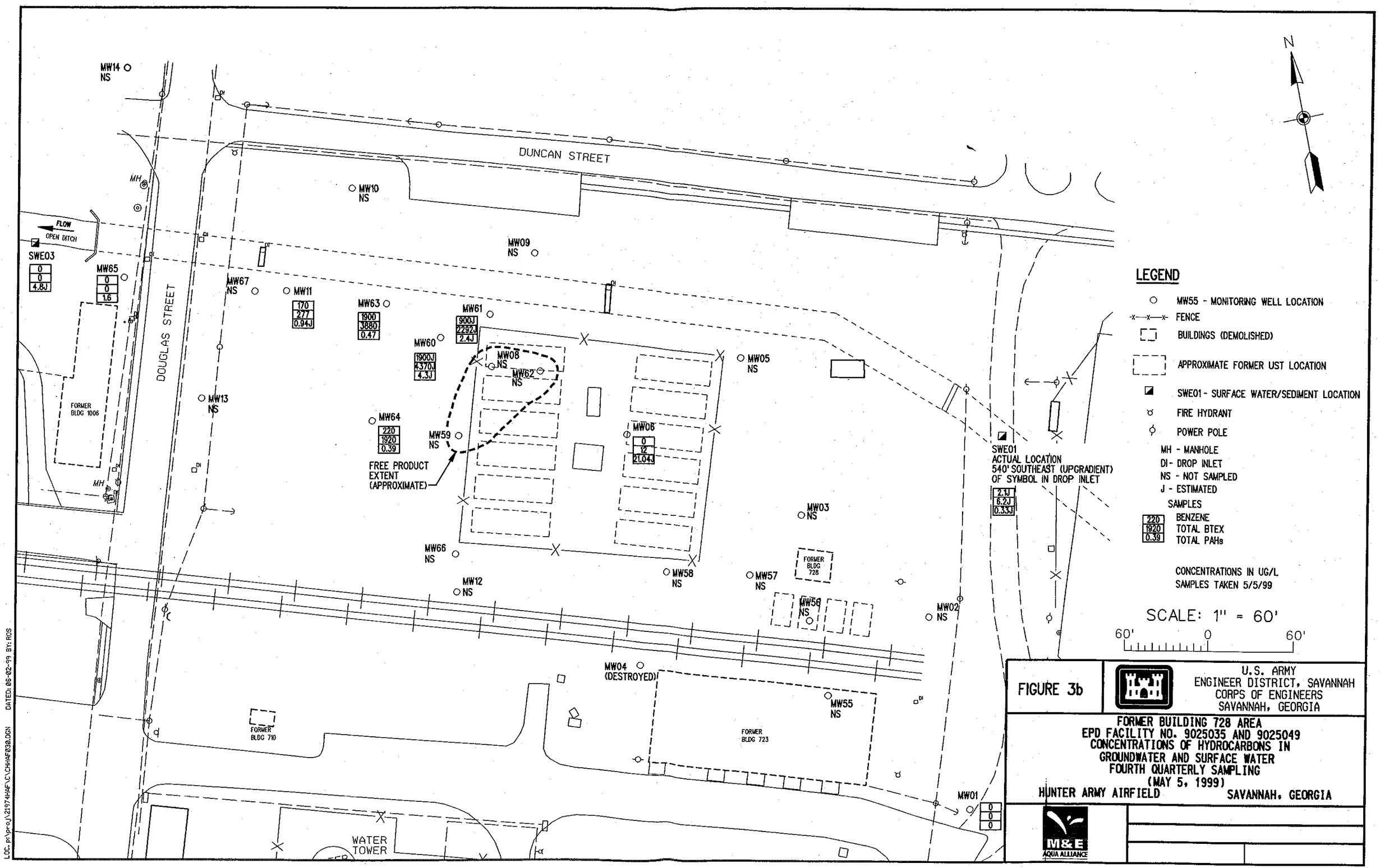


FIGURE 3b

U.S. ARMY
ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

FORMER BUILDING 728 AREA
EPD FACILITY NO. 9025035 AND 9025049
CONCENTRATIONS OF HYDROCARBONS IN
GROUNDWATER AND SURFACE WATER
FOURTH QUARTERLY SAMPLING
(MAY 5, 1999)
HUNTER army AIRFIELD SAVANNAH, GEORGIA

M&E AQUA ALLIANCE

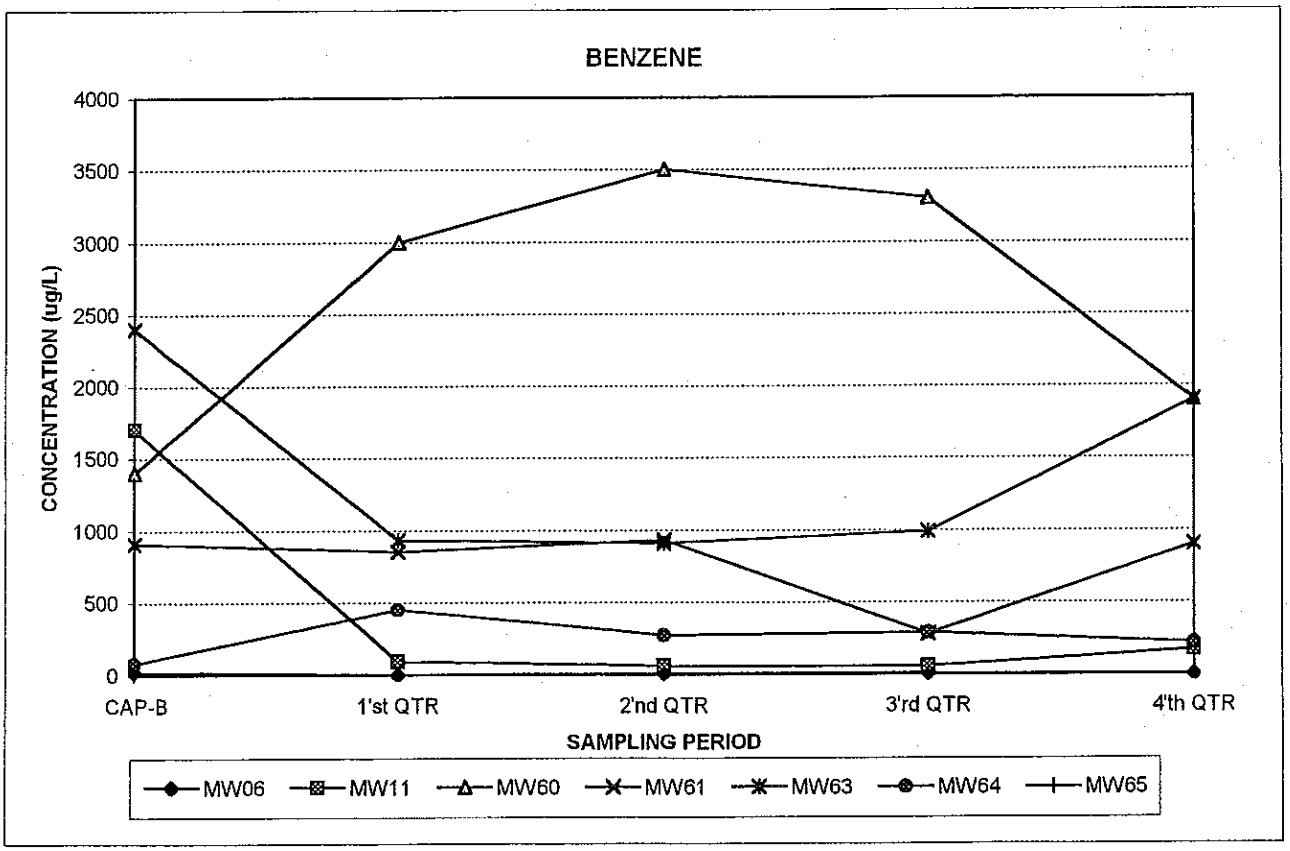
LOC: p:\proj\21974haf\cl\chhaf038.dgn DATED: 06-02-99 BY: ROS

FIGURE 4

ANNUAL MONITORING SPREADSHEET (BENZENE) - FOURTH QUARTER
FORMER BUILDING 728, EPD FACILITY NO. 9025035 and 9025049
HUNTER ARMY AIRFIELD

WELL #	BENZENE RESULTS (ug/L)				
	CAP-B	1'st QTR	2'nd QTR	3'rd QTR	4'th QTR
MW01	0	0	0	0	0
MW02	0	NS	NS	NS	NS
MW03	4.2	NS	NS	NS	NS
MW05	0	NS	NS	NS	NS
MW06	24	0	7.5	9.3	0
MW09	0	NS	NS	NS	NS
MW10	0	NS	NS	NS	NS
MW11	1700	95	62	56	170
MW12	56	NS	NS	NS	NS
MW13	1.4	NS	NS	NS	NS
MW14	0	NS	NS	NS	NS
MW55	0	NS	NS	NS	NS
MW56	17	NS	NS	NS	NS
MW57	24	NS	NS	NS	NS
MW58	41	NS	NS	NS	NS
MW60	1400	3000	3500	3300	1900
MW61	910	850	930	280	900
MW63	2400	930	910	990	1900
MW64	81	450	270	290	220
MW65	0	0	0	0	0
SMW01	0	0	0	0	NS

NS - Not Sampled



APPENDIX II

TABLES

TABLE 1: GROUNDWATER ELEVATIONS (May 1999)
Former Building 728, Fourth Quarterly Sampling
Hunter Army Airfield
Chatham County, Facility ID Nos. 9025035 and 9025049

Location	Screen Interval ft, bgs	Water Depth, TOC	TOC Elevation, ft, msl	Water Level Elevation, ft, msl	Surface Elevation, ft, msl	Free Prod. Thickness ft.
CAP-A						
MW01	3.2-13.2	4.04	19.20	15.16	19.5	
MW02	3.8-13.8	5.89	20.51	14.62	20.8	
MW03	2.6-12.6	6.47	20.80	14.33	21.1	
MW04	3.4-13.4	Destroyed	3/97			
MW05	3.3-13.3	6.50	20.37	13.87	20.7	
MW06	2.9-12.9	5.95	20.02	14.07	20.4	
MW08	3.5-13.5	Product	Recovery		19.6	0.85 (11/98)
MW09	3.1-13.1	7.31	20.27	12.96	20.5	
MW10	2.9-12.9	6.77	19.11	12.34	19.4	
MW11	2.3-12.3	6.74	18.89	12.15	19.3	
MW12	2.9-12.9	4.46	18.51	14.05	18.8	
MW13	4.0-14.0	6.31	18.39	12.08	18.7	
MW14	4.0-14.0	7.22	18.76	11.54	19.0	
CAP-B						
MW55	2.0-12.0	3.60	18.32	14.72	18.5	
MW56	1.4-11.4	NA	19.69	NA	19.8	
MW57	2.0-12.0	5.76	20.10	14.34	20.3	
MW58	2.0-12.0	5.04	19.21	14.17	19.4	
MW59	2.0-12.0	Product	Recovery	NA	19.4	0.04 (3/99)
MW60	3.0-13.0	7.44	20.30	12.86	20.4	
MW61	3.0-13.0	7.37	20.34	12.97	20.5	
MW62	3.0-13.0	Product	Recovery	NA	19.9	0.66 (3/99)
MW63	4.0-14.0	7.50	20.15	12.65	20.3	
MW64	3.0-13.0	6.12	18.98	12.86	19.1	
MW65	3.0-13.0	7.21	18.41	11.20	18.6	
MW66	35.6-40.6	NA	18.60	NA	18.8	
MW67	33.0-38.0	NA	18.82	NA	19.0	

bgs-below ground surface

TOC-top of casing

msl-mean sea level

Measurements on 5/5/99

NA- not measured

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TABLE 2 : GROUNDWATER ANALYTICAL RESULTS, FOURTH QUARTERLY SAMPLING (MAY 1999)

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
MW01	5/5/99	Primary	U	U	U	U	U	U
MW06	5/5/99	Primary	U	U	12	U	12	21.04J
MW11	5/5/99	Primary	170	14	14	79	277	0.94J
MW60	5/5/99	Primary	1900J	160	410	1900	4370J	4.3J
MW61	5/5/99	Primary	900J	22	270	1100	2292J	2.4J
MW63	5/5/99	Primary	1900	250	330	1400	3880	0.47
MW64	5/5/99	Primary	220	360	140	1200	1920	0.39
MW61	5/5/99	Duplicate 1	890J	22	270	1100	2282J	1.66J
MW65	5/5/99	Primary	U	U	U	U	U	1.60
SMW01(B710)			NS	NS	NS	NS	NS	NS
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.
J = Result is estimated
NS = Not Sampled

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS, FOURTH QUARTERLY SAMPLING (MAY 1999)

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	TOTAL BTEX (ug/l)	TOTAL PAH (ug/l)
SW01	2/5/99	Primary	2.15	1	0.8	2.3	6.2J	0.33J
SW03	2/5/99	Primary	U	U	U	U	U	4.8J
SW1005	2/5/99	Duplicate	2.0J	1	0.8	2.2	6.0J	1.48J
ARARS		IWQS	71.28	200,000	28,718	-	-	-

U = Not Detected.
(-) = No IWQS listed.
J = Estimated

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TABLE 4 : SEDIMENT ANALYTICAL RESULTS, FOURTH QUARTERLY SAMPLING (MAY 1999)

Former Building 728
Hunter Army Airfield
Chatham County, Facility ID No. 9025035 & 9025049

SITE	DATE	RESULT TYPE	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TOTAL BTEX (mg/kg)	TOTAL PAH (mg/kg)
SW03	2/5/99	Primary	U	U	U	U	U	11.03J
SW1005	2/5/99	Duplicate	U	U	U	U	U	5.92J
ARARS		STL	0.017	115	18	700	-	-

U = Not Detected.
J = Estimated
(-) = No STL listed (Table B, <500 ft to surface water).

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APPENDIX III

LABORATORY ANALYTICAL RESULTS

DATA QUALITY SUMMARY REPORT

Hunter Army Airfield - Long Term Monitoring
Former Buildings 728, 1310 & Fire Fighter Training Area
June 21, 1999

1.0 INTRODUCTION

Metcalf & Eddy, Inc. was contracted by the United States Army Corps of Engineers, Savannah District, to perform quarterly groundwater monitoring at various locations at the former Hunter Army Airfield. This event represents the long term monitoring analytical data for November 1998.

Metcalf & Eddy, Inc. contracted with Analytical Services Inc. (ASI) Laboratories to perform the required analyses of groundwater, surface water and sediment samples. The analytical data was validated using the guidance found in USEPA National Functional Guidelines for Organics Data Review and Inorganics Analysis. This guidance follows the Quality Assurance (QA)/Quality Control (QC) requirements outlined in the USEPA's Test Methods for Evaluating Solid Waste (EPA SW-846). Overall these guidelines mimic the most current editions of the EPA's Functional Guidelines for Reviewing Organic and Inorganic Analyses conducted outside the EPA's Contract Laboratory Program (CLP).

The following sections of this Data Quality Summary Report discuss the laboratory reporting, data validation, problems encountered and corrective actions as applied to the samples and data collected during this determination.

1.1 Field Samples and Analysis

The following report summarizes the validation findings of the samples included in the Sample Data Groups listed below.

SDG	*Date*	*Matrix*	*Samples*	*Field Duplicates*	*Trip Blanks*	*Equipment Blanks*
107713	05/15/99	WATER	21	3	1	1
		SEDIMENT	1	1	0	0

Nineteen groundwater samples, two surface water samples, one sediment sample, four field duplicates one trip blank and one equipment rinsate were analyzed. All water samples were analyzed for PAH's by EPA method 8310. All sediment samples were analyzed for PAH's by EPA method 8100. Groundwater, surface water and sediment from buildings 728, 1310 and the fire fighter training area (FTA) were analyzed for volatile aromatics by EPA method 8021. All samples were analyzed by ASI Laboratories, Norcross, Georgia using the above listed USEPA SW-846 Methods.

2.0 LABORATORY REPORTING

2.1 Laboratory Blanks

Laboratory blanks or method blanks are artificial samples prepared from the same matrix type as the samples to be analyzed. These blanks are taken through sample preparation and analyzed before the field samples to determine if the glassware, sample preparation or laboratory environment has contaminated the field samples.

Laboratory blanks for all methods of analysis of groundwater, surface water and sediment were analyzed at the required frequency and were free of contaminants.

2.2 Laboratory Control Samples (% Recovery)

Laboratory control samples are artificial samples prepared from the same matrix type as the samples to be analyzed. These samples are processed through sample preparation and analyzed to assess the performance of each analytical system that the laboratory uses to analyze the field samples.

All laboratory control samples for all methods of analysis of groundwater, surface water and sediment were analyzed at the required frequency.

2.3 Precision (% RPD)

Laboratory precision is evaluated by calculating the relative percent difference (RPD) between the values reported for a matrix spiked (MS) sample and its duplicate, the matrix spiked duplicate (MSD), or any other set of duplicate parameters. The following equation is utilized for this calculation:

$$RPD = \frac{|Vs - Vd|}{[Vs + Vd] / 2} \times 100$$

Where *Vs* is the value reported for the matrix spiked (MS) sample and *Vd* is the value reported for it's duplicate (MSD). Sample RPDs are compared to the analyzing laboratory's precision control limits which are primarily derived from their in-house quality control data.

RPDs for all methods of analysis of matrix spiked groundwater and surface water samples were within required control limits with the exception of three matrix spikes which exhibited RPDs outside of acceptance criteria for five VOC's and two matrix spikes which exhibited RPD's outside of acceptance criteria for two PAH's. No qualifiers were required.

RPDs for all methods of analysis of matrix spiked sediment samples were within required control limits with the exception of one matrix spike which exhibited RPDs outside of acceptance criteria for twelve PAH's. No qualifiers were required.

RPDs of field duplicates for all methods of analysis of groundwater and surface water were within the established control limits with the exception of two PAH and two VOC samples. No qualifiers were required.

RPDs of field duplicates for all methods of analysis of sediment were within the established control limits with the exception of one PAH sample. No qualifiers were required.

2.4 Surrogate Recovery

Surrogates are compounds similar to analytes of interest but are not normally found in environmental samples. Prior to sample preparation and analysis, surrogates are spiked into laboratory control samples, calibration and check standards, matrix spiked samples and field samples. Accuracy is measured by calculating percent recoveries for each surrogate as follows:

$$\%R = \frac{\text{Concentration of spike found}}{\text{Concentration of spike added}} \times 100$$

Surrogate recoveries for groundwater, surface water and sediment were all within the required control limits with the exception of three samples; (FTAHMW-4, FTAHMW-9 and FTAHMW-11), which exhibited slightly high recoveries for 1,2-dichloroethane-d4.

2.5 Holding Time

Holding time is the storage time allowed between sample collection and sample analysis when the designated preservation and storage techniques are employed.

All groundwater, surface water and sediment samples were analyzed within required holding times for all methods of analysis.

2.6 Temperature

Chain of custody forms and cooler receipts document that the laboratory received all samples at temperatures ranging from 1 ^{o}C to 6 ^{o}C. These temperatures are within the acceptable limits of the required preservation requirement of 4 ^{o}C plus or minus 2 ^{o}C.

2.7 Completeness

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness.

3.0 DATA VALIDATION

The objective when evaluating the quality of chemical data is to determine its usability. The evaluation is based upon the interpretation of the laboratory QC data, the field QC data, and the project Data Quality Objectives (DQOs). The evaluation process is often termed "data validation".

3.1 Laboratory Data Validation

Laboratory data were evaluated to assess, holding times, laboratory blanks, laboratory control samples, surrogate recoveries, and matrix spike/matrix spike duplicate (MS/MSD) relative percent differences (RPDs). These criteria were used to evaluate the bias and precision of the data generated by the laboratory. The bias of the laboratory data was assessed through consideration of the following:

- Adherence to the prescribed method
- Recovery of MS/MSD from field samples
- Method blank contamination
- Adherence to sample preparation and holding times
- Recovery of surrogate spikes
- Field duplicate precision

3.2 Definition of Data Qualifiers

During the data validation process, all laboratory data had to be evaluated and assigned a data qualifier, as applicable. These qualifiers are defined in the February 1994 EPA documents titled, "National Functional Guidelines for Organic and Inorganic Data Review." The guidance also describes procedures to be followed when qualifying data. The data qualifiers are defined as follows:

U = the compound was analyzed for, but was not detected above the level of the associated value
J = the associated value is an estimated quantity. The reported result is qualitatively accurate but quantitatively imprecise.
UJ = the compound was analyzed for, but was not detected, and the associated value is an estimated value due to a variance from quality control limits.
R = the reported result or quantitation limit is rejected and unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte can not be verified

Data qualifier flags were not assigned to data that were totally in compliance with Quality Control requirements.

For organic data, specifically VOCs, the positive and undetected (U) results were qualified as estimated (J/UJ) if one surrogate compound was detected outside acceptable recovery limits and/or the recovery was greater than 10 percent. If the recoveries of one surrogate compound were less than 10 percent, then the positive results were qualified as estimated (J) and the undetected results were rejected (R). Results of PAH compounds are validated in the same manner as VOC, the qualifiers are applied to results with one or more surrogate compounds detected outside the acceptable recovery limits.

3.3 Qualified Results

Groundwater and Surface water:

VOC's - Benzene was qualified as estimated (J), due to high matrix spike recoveries for samples;728SWE01, 728MW60, 728MW61, FTAHMW-11, FTAHMW-4, FTAHMW-6 and FTAHMW-8.
Ethylbenzene and total xylenes were qualified as estimated (J), due to high matrix spike recoveries for sample;FTAHMW-11.

PAHs - Naphthalene was qualified as estimated (J), due to high matrix spike recoveries for samples;728SWE01, 728SWE03, FTAHMW-8 & FTAHMW-10.
Dibenz(a,h)anthracene was qualified as estimated (J), due to low matrix spike recovery for samples; 728MW06 and 728MW-11.
Phenanthrene was qualified as estimated (J), due to high matrix spike recoveries for samples;728MW06, 728MW60, 728MW61, FTAHMW-11 & FTAHMW-6.
Fluoranthene and Pyrene were qualified as estimated (J), due to high matrix spike recoveries for sample;FTAHMW-6.

Sediment:

PAHs - Acenaphthene was qualified as estimated (J), due to low matrix spike recovery for sample; 728SWE03.
Naphthalene, phenanthrene and pyrene were qualified as estimated (J), due to high matrix spike recoveries for sample; 728SWE03.

4.0 PROBLEMS ENCOUNTERED

Any problems encountered during sample analysis for this investigation are described in detail below. Analytical data that did not meet the QC requirements were qualified as stated in **Section 3.3**.

4.1 Holding Times

No problems were present regarding hold times.

4.2 Surrogate Recovery

No problems were encountered other than a few outliers were encountered.

4.3 Precision (% RPD)

No problems were encountered outside of a few field duplicate outliers. No qualifiers were applied.

4.4 Field Duplicates

In addition to the matrix spike sample, field duplicates were collected to assess sampling precision. Duplicate samples were collected at a frequency of one per site, per matrix, per sampling event. Field duplicate RPDs were within the quality control limits for 95% of the parameters analyzed. Sample duplicate precision is indicative that these data are comparable and representative of field conditions.

4.5 Equipment Rinsates

One equipment rinsate was analyzed in with this set of groundwater and surface water samples. The rinsate blank was found to be free of contamination.

4.6 Laboratory Blanks

Laboratory blanks were within the specified method criteria and the sample results required no qualifications with the exception of the samples mentioned under **Section 3.3**.

4.7 Laboratory Control Standards

Laboratory control standards were within the specified method criteria and the sample results required no qualifications with the exception of the samples mentioned under **Section 3.3**.

5.0 SUMMARY OF DATA QUALITY

The amount of data obtained compared to the amount of data that was expected to be obtained is enough to achieve the goal of >99% completeness. The results of the data validation indicate the quality of the data is within QC limits and is acceptable to verify or deny any contamination present in the groundwater at this site.

Reviewed by: W. Vang

Date: 6/21/99

hunter1\chem\reports\4thqtr.ltm

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR GROUNDWATER
EPD FACILITY NO. 9025035 & 9025049

CONSTITUENT (Units in ug/l)	SITE	728MW01	728MW06	728MW11	728MW60	728MW61	728MW61
	SAMPLE ID	728-MW0105	728-MW0605	728-MW1105	728-MW6005	728-MW8005	728-MW6105
	DATE	05/05/99	05/05/99	05/05/99	05/05/99	05/05/99	05/05/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Benzene		<0.5	<0.5	170	1900 J	890 J	900 J
Toluene		<0.5	<0.5	14	160	22	22
Ethylbenzene		<0.5	12	14	410	270	270
Xylene (total)		<1.0	<1.0	79	1900	1100	1100
Chlorobenzene		<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
1,2-Dichlorobenzene		<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
1,3-Dichlorobenzene		<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
1,4-Dichlorobenzene		<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
		---	---	---	---	---	---
Acenaphthene		<0.302	1.8	<0.302	<0.302	<0.302	<0.302
Acenaphthylene		<0.164	5.5J	<0.164	<0.164	<0.164	<0.164
Anthracene		<0.097	0.18	<0.097	<0.097	<0.097	<0.097
Benzo(a)anthracene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(b)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Chrysene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Dibenz(a,h)anthracene		<0.031	<0.031 J	<0.031 J	<0.031	<0.031	<0.031
Fluoranthene		<0.123	0.56 J	<0.123	<0.123	<0.123	<0.123
Fluorene		<0.092	3.1	<0.092	2.9	0.66	1.3
Indeno(1,2,3-cd)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	<0.0311
Naphthalene		<0.214	6.5J	0.94 J	<0.214	<0.214	<0.214
Phenanthrene		<0.103	3.4 J	<0.103	1.4 J	1.0 J	1.1 J
Pyrene		<0.107	<0.107	<0.107	<0.107	<0.107	<0.107

Values represent total concentrations unless noted < =Not detected at indicated reporting limit ---=Not analyzed

EPA METHODS:8021,8310. J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR GROUNDWATER
EPD FACILITY NO. 9025035 & 9025049

CONSTITUENT (Units in ug/l)	SITE	728MW63	728MW64	728MW65	728SWE01	728SWE01	728SWE03
	SAMPLE ID	728-MW6305	728-MW6405	728-MW6505	728-SW0105	728-SW1005	728-SW0305
	DATE	05/05/99	05/05/99	05/05/99	05/05/99	05/05/99	05/05/99
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate 1	Primary
Benzene		1900	220	<0.5	2.1 J	2.0 J	<0.5
Toluene		250	360	<0.5	1.0	1.0	<0.5
Ethylbenzene		330	140	<0.5	0.8	0.8	<0.5
Xylene (total)		1400	1200	<1.0	2.3	2.2	<1.0
Chlorobenzene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		---	---	---	---	---	---
Acenaphthene		<0.302	<0.302	<0.302	<0.302	<0.302	<0.302
Acenaphthylene		<0.164	<0.164	<0.164	<0.164	<0.164	<0.164
Anthracene		<0.097	<0.097	<0.097	<0.097	<0.097	<0.097
Benzo(a)anthracene		<0.0311	<0.0311	<0.0311	<0.0311	0.047	0.11
Benzo(a)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	0.47
Benzo(b)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	0.072	0.39
Benzo(ghi)perylene		<0.157	<0.157	<0.157	<0.157	<0.157	<0.157
Benzo(k)fluoranthene		<0.0311	<0.0311	<0.0311	<0.0311	<0.0311	0.12
Chrysene		<0.0311	<0.0311	<0.0311	<0.0311	0.080	0.34
Dibenz(a,h)anthracene		<0.031	<0.031	<0.031	<0.031	0.84	0.69
Fluoranthene		<0.123	<0.123	<0.123	<0.123	<0.123	0.50
Fluorene		0.47	0.39	<0.092	<0.092	<0.092	<0.092
Indeno(1,2,3-cd)pyrene		<0.0311	<0.0311	<0.0311	<0.0311	0.090	0.22
Naphthalene		<0.214	<0.214	1.6	0.33J	0.35J	1.6J
Phenanthrene		<0.103	<0.103	<0.103	<0.103	<0.103	0.11
Pyrene		<0.107	<0.107	<0.107	<0.107	<0.107	0.25

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METH(3021,8310. = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
LONG TERM MONITORING - BUILDING 728
PRIMARY RESULTS FOR SEDIMENT
EPD FACILITY NO. 9025035 & 9025049

CONSTITUENT (Units in mg/kg)	SITE	728SWE03	728SWE03
	SAMPLE ID	728-SE0305	728-SE1005
	DATE	05/05/99	05/05/99
	DEPTH (ft)	0.00	0.00
	RESULT TYPE	Primary	Duplicate 1
Benzene		<0.0029	<0.0029
Toluene		<0.0029	<0.0029
Ethyl benzene		<0.0029	<0.0029
Xylene (total)		<0.0029	<0.0029
		---	---
Acenaphthene		<0.15 J	<0.15 J
Acenaphthylene		<0.15	<0.15
Anthracene		<0.15	<0.15
Benzo(a)anthracene		0.37 J	0.18 J
Benzo(a)pyrene		0.76 J	0.37 J
Benzo(b)fluoranthene		0.71 J	0.34 J
Benzo(ghi)perylene		0.72 J	0.47 J
Benzo(k)fluoranthene		0.41	0.22
Chrysene		0.94 J	0.44 J
Dibenzo(a,h)anthracene		<0.15	<0.15
Fluoranthene		1.4 J	0.72 J
Fluorene		<0.15	<0.15
Indeno(1,2,3-cd)pyrene		0.44	0.21
Naphthalene		4.4 J	2.2 J
Phenanthrene		0.41 J	0.21 J
Pyrene		0.47 J	0.24 J
		---	---
Diesel Range Organics		<10	<10
Gasoline Range Organics		<0.29	0.32

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

For RCL 8000AJASI

00009

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

AST# 107713 pg 1 of 12

1 of 3

PROJECT NAME: HUNTER LTM

TASK ORDER NO.

PROJECT NO: 01945J

SAMPLE EVENT:

LABORATORY ID: AST

PROGRAM TYPE: WRPPE VERIFICATION

SAMPLER(S) NAME: DAVID HUMPHRIES

SAMPLER(S) SIGNATURE:

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID PDOSWE03	RES. CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)	FILTERED (L) LAB (F) FIELD
5/5/99	0745	W	PDO-SW030S	728SWE03 (dup)	PP01		3	Y	
5/5/99	0815	W	PDO-SW0205	PDOSWE02	PP01		3	Y	
5/5/99	0815	W	PDO-SW2005	PDOSWE02	PD11		3	Y	
5/5/99	0900	W	PDO-SW0105	PDOSWE01	PP01		3	Y	
5/5/99	0910	W	PDO-GWT-2305	PDOMW1-23	PP01		3	Y	
5/5/99	1030	W	728-SW0305	728SWE03	PP01		3	Y	
5/5/99	1120	W	728-SW0105	728SWE01	PP01		3	Y	
5/5/99	1120	W	728-SW1005	728SWE01	PD11		3	Y	
5/5/99	1525	W	728-~~MW0605~~	728MW06 (dup)	PP01		3	Y	
5/5/99	1545	W	728-MW0605	728MW06	PP01		3	Y	
5/5/99	1545	W	728-MW0605MS/MSD	728MW06	SC11		6	Y	
5/5/99	1600	W	728-MW6005	728MW60	PP01		3	Y	

Method No.	VOCs 8260B	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
	9DC								
	3							-1	
	3							-2	
	3							-3	
	3							-4	
	3							-5	
	3							-6	
	3							-7	
	3							-8	
	3							-9	
	3							-10	
	6							-11ms/-12msd	
	3							-13	

Relinquished by: (Signature)

Date/Time: 5/5/99 1800

Received by: S. Jackson

Date/Time: 5/6/99 / 9:15am

Cooler Temperature: 1°C (9:30am) 4°C (9:32)

Remarks: (cooler #1 (1727) 5/7/99 Evidence; coolant; pH=n/a

Send Results to: 750 cont.

AIRBILL CO. FED EX

TRACKING NO: 6016821607

Christine Hettinger c/o METCALF & EDDY, INC.
201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER ____
STORED/SHIPPED IN ICE Y/N

000110

2 of 3

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

ASI# 107713 pg 2 of 12

PROJECT NAME: HUNTER LTM

PROJECT NO: 019457

LABORATORY ID: ASI

SAMPLER(S) NAME: WAYNE VERREAULT, DAVID HUMPHRIS

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: W. Verreault

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (SAM)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV (Y/N)	FILTERED (L) LAB (F) FIELD	VOCS 8260B	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	Method No.
5/5/99	1600	W	728-MW8005	728MW60	PD11		3	Y		3							-14	
5/5/99	1615	W	728-MW6105	728MW61	PP01		3	Y		3							-15	
5/5/99	1630	W	728-MW6405	728MW64	PP01		3	Y		3							-16	
5/5/99	1645	W	728-MW6305	728MW63	PP01		3	Y		3							-17	
5/5/99	1650	W	728-MW1105	728MW11	PP01		3	Y		3							-18	
5/5/99	1655	W	728-MW6505	728MW65	PP01		3	Y		3							-19	
5/5/99	1705	W	728-EB01	728MW65	BR11		3	Y		3							-20	
		W	728-TR01		BT11		2	Y		2		4 per method					-21	

Relinquished by: (Signature) W. Verreault Date/Time: 5/5/99 1800

Received by: S. Jackson Date/Time: 5-6-99 9:15 AM

Cooler Temperature: 1°C (9:30 am) 4 (9:32) Inside cooler

Remarks: Cooler # 1 (1727) Trip Blank site I.D. per master list given 5/7/99

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. FED EX

TRACKING NO: 876683167 3

00011

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE Y/N

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

ASI# 107913 pg 6 of 12

PROJECT NAME: HUNTER LTM

PROJECT NO: 01945T

LABORATORY ID: ASI

SAMPLER(S) NAME: ~~WAYNE DERMOYCHUK~~ DAVID HUMPHRIS

TASK ORDER NO.:

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: [signature]

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT)	NO. OF CONTS	STANDARD PRESERV. (Y/N)	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.										8260	8270	ICP GFAA 6010 7000	8151					
5/5/99	0745	W	PDO-SW0305	PDOSWE03	PP01	/	2	Y				2					-1	
5/5/99	0745	S	PDO-SE0305	PDOSWE03	PP01	/	2	~~Y~~			1	1					-22	
5/5/99	0815	S	PDO-SE0205	PDOSWE02	PP01	/	2				1	1					-23	
5/5/99	0815	S	PDO-SE2005	PDOSWE02	PD11	/	2				1	1					-24	
5/5/99	0815	W	PDO-SW0205	PDOSWE02	PP01	/	2	Y				2					-2	
5/5/99	0815	W	PDO-SW2005DUP	PDOSWE02	PD11	/	2	Y				2					-3	
5/5/99	0900	W	PDO-SW0105	PDOSWE01	PP01	/	2	Y				2					-4	
5/5/99	0900	S	PDO-SE0105	PDOSWE01	PP01	/	2				1	1					-25	
5/5/99	0900	S	PDO-SE0105MS/MSD	PDOSWE01	SL11	/	2				1	1				-26ms	-27msd	
5/5/99	0910	W	PDO-GW-2305	PDOMW-23	PP01	/	2	Y				2					-5	
5/5/99	1030	S	728-SE0305	~~PDOSWE03~~ 728SWE03	PP01	/	2			1			1				-28	
5/5/99	1030	S	728-SE0305MS/MSD	728SWE03	SL11	/	4			2			2				-29ms, -30msd	

Relinquished by: (Signature) [signature] **Date/Time:** 5/7/99 1130 **Received by:** [signature] **Date/Time:** 5/7/99 11:30

Cooler Temperature: 7°C

Temp Blank = 5°C (IL:49)

Remarks: cooler #3 (1428) HAND DELIVERED [signature] 5/7/99

5°C cooler; no seal; pH = ((metals)

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
..01 Peachtree St., N.E., 400 Colony Square, Suite 1101
..nta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO.

TRACKING NO:

STANDARD PRESERVATION (Y):

- (H) HCl/VOC,
- (N) HNO_3/METALS
- (S) H_2SO_4/
- (O) OTHER

STORED/SHI.. ..N ICE Y/N

M&E Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

ASI #10773 pg 7 of 12

PROJECT NAME: Hunter LTM

TASK ORDER NO.:

PROJECT NO: 019457

SAMPLE EVENT: Quarterly

LABORATORY ID: ASI

PROGRAM TYPE:

SAMPLER(S) NAME: D. Humphries / W. Vermeychuk

SAMPLER(S) SIGNATURE: D. Humphries

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES. CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
5/5/99	0745	W	PDO-SW0305	PDOSWE03	PP01		2		
5/5/99	0815	W	PDO-SW0205	PDOSWE02	PP01		2		
5/5/99	0815	W	PDO-SW2000DUP	PDOSWE02	PP/1		2		
5/5/99	0910	W	PDO-GW-2305	PDOMW1-23	PP01		2		
5/5/99	1120	W	728-SW0105	728SWE01	PP01		2		
5/5/99	1120	W	728-SW1005	728SWE01	PD11		2		
5/5/99	1030	W	728-SW0305	728SWE03	PP01		2		

ANALYTICAL PARAMETERS/METHODS

	VOCS	SVOC	METALS (ICP, Hg CVAA, GFAA)	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.	8260	8310							
	2	2	[illegible]					-1	
	2	2	[illegible]					-2	
	2	2	[illegible]					-3	
	2	2	[illegible]					-5	
		2						-7	
		2						-8	
		2						-6	

Relinquished by: (Signature) D. Humphries — Date/Time: 5/7/99 1130 — Received by: [signature] — Date/Time: 5/7/99 11:30

Cooler Temperature: 6°C 5/7/99

Temp Blank = 5°C

Remarks: Cooler #4 (1603) [signature] 5/7/99 [illegible] ; pH ok

AIRBILL CO. Hand Delivered

TRACKING NO.:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER ______
STORED/SHIPPED IN ICE Y/N

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

ASI # 107713 pg 8 of 17

PROJECT NAME: HUNTER LTM

PROJECT NO: 019457

LABORATORY ID: ASI

SAMPLER(S) NAME: ~~WAYNE VERMEYCHUK~~ DAVID HUMPHRIES

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE:

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES. CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.											8270							
5/5/99	1525	W	728-MW0105	728MW01	PP01		2				2					-9		
5/5/99	1545	W	728-MW0605	728MW06	PP01		2				2					-10		
5/5/99	1545	W	728-MW0605 MS/MSD	728MW06	SC11		4				4			-11ms, -12msd				
5/5/99	1600	W	728-MW6005	728MW60	PP01		2				2					-13		
5/5/99	1615	W	728-MW6105	728MW61	PP01		2				2					-15		
5/5/99	1615	W	728-MW8005	728MW60	PD11		2				2					-14		

Relinquished by: (Signature)

Date/Time: 5/7/99 11:30

Received by:

Date/Time: 5/7/99 11:30

Remarks: Cooler #5 (1164) 5/7/99 Singedaci; no seal; pH = n/a

Cooler Temperature: 5°C

Temp Blank = 3°C

AIRBILL CO.

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER
STORED/S[illegible] IN ICE Y/N

107713

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

ASI # 107713 pg 12 of 12

PROJECT NAME: HUNTER LTM

PROJECT NO: 019 457

LABORATORY ID: ASI

SAMPLER(S) NAME: D Humphries / W. Varmeydunk

TASK ORDER NO.

SAMPLE EVENT: Quarterly

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: [signature]

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO
Method No.										8260 de	8270 de						
5/5/99	0900	W	PDO-SW0105	PDOSWE01	PP01		2				2					-4	
5/5/99	1630	W	728-MW6405	728MW64	PP01		2			2						-16	
5/5/99	1645	W	728-MW6305	728MW63	PP01		2			2						-17	
5/5/99	1650	W	728-MW1105	728MW11	PP01		2			2						-18	
5/5/99	1655	W	728-EB01	728MW11	BR11		2			2						-20	
5/5/99	1705	W	728-MW6505	728MW65	PP01		2			2						-19	

Relinquished by: (Signature) D. Humphries — Date/Time: 5/7/99 1150 — Received by: [signature] — Date/Time: 5/7/99 11:30

[signature] — 5/7/99 — [illegible]; 40 sent; pH = 1/7

Remarks: cooler #9 (1683)

Cooler Temperature: 5°C

Temp Blank 3°C

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO. Hand Deliver

TRACKING NO:

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER ______

STORED/SHIPPED IN ICE Y/N

Cooler #1 (ASI 1727)

Cooler Receipt Form

Number of Coolers: 1 LIMS # 107713 Date Received: 5/6/99

Project: Hunter LTM, Project # 019457

Use other side of this form to note details concerning check-in problems

A. Preliminary Examination Phase: Date cooler was opened: 5/6/99

by (print): S. Jackson (sign) S. Jackson

1. Did cooler come with a shipping slip (airbill, etc.)? (Yes) No

If YES, then enter carrier name and airbill number here: FedEx # 876683673

2. Were custody seals on outside of cooler? (Yes) No

How many & where: 2 around cooler, seal date: No Date, seal name: M&E not signed

3. Were custody seals unbroken and intact at the date and time of arrival? (Yes) No

4. Did you screen samples for radioactivity using a Geiger counter? (Yes) No

5. Were custody papers sealed in a plastic bag & taped inside to the lid? Yes (No)

6. Were custody papers filled out properly (ink, signed, etc.)? (Yes) No

7. Did you sign custody papers in the appropriate place? (Yes) No

8. Was project identifiable from custody papers? (Yes) No

If YES, enter project name at the top of this form.

9. If required, was enough ice used? Type of ice: bagged (Yes) No

10. Have designated person initial here to acknowledge receipt of cooler: JMM (date): 5/6/99

B. Log-in Phase: Date samples were logged-in: 5/7/99

by (print): Joseph C. Muller (sign)

11. Describe type of packing in cooler: bagged ice / bubble wrap

12. Were all bottles sealed in separate plastic bags? Yes (No)

13. Did all bottles arrive unbroken and were labels in good condition? (Yes) No

14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? (Yes) No

15. Did all bottle labels agree with custody papers? (Yes) No

16. Were correct containers used for the tests indicated? (Yes) No

17. Were correct preservatives added to samples? (Yes) No

18. Was a sufficient amount of sample sent for the tests indicated? (Yes) No

19. Were bubbles absent from VOA samples? If NO, list by sample#_____ (Yes) No

20. Was the project manager called and status discussed? If YES, give details on back. Yes (No)

21. Who was called:_____ by whom_____ date_____

Cooler # 3 (ASI 1478)

Cooler Receipt Form

Number of Coolers: 1 LIMS # 107713 Date Received: 5/7/99

Project: Hunter LTM, Project # 019457

Use other side of this form to note details concerning check-in problems

A. Preliminary Examination Phase: Date cooler was opened: 5/7/99

by (print): W. Ryan Dixon (sign) [signature]

1.	Did cooler come with a shipping slip (airbill, etc.)?		Yes	(No)
	If YES, then enter carrier name and airbill number here:			
2.	Were custody seals on outside of cooler?		Yes	(No)
	How many & where: , seal date: , seal name:			
3.	Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	N/A
4.	Did you screen samples for radioactivity using a Geiger counter?	(Yes)	No	
5.	Were custody papers sealed in a plastic bag & taped inside to the lid?	Yes	(No)	
6.	Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	
7.	Did you sign custody papers in the appropriate place?	(Yes)	No	
8.	Was project identifiable from custody papers?	(Yes)	No	
	If YES, enter project name at the top of this form.			
9.	If required, was enough ice used? Type of Ice: bagged	(Yes)	No	
10.	Have designated person initial here to acknowledge receipt of cooler: [initials] (date): 5/7/99			

B. Log-in Phase: Date samples were logged-in: 5/7/99

by (print): Joseph C. Mueller (sign) [signature]

11.	Describe type of packing in cooler: bagged ice / bubble wrap			
12.	Were all bottles sealed in separate plastic bags?		Yes	(No)
13.	Did all bottles arrive unbroken and were labels in good condition?		(Yes)	No
14.	Were all bottle labels complete (ID, date, time, signature, preservative, etc.)?		(Yes)	No
15.	Did all bottle labels agree with custody papers?		(Yes)	No
16.	Were correct containers used for the tests indicated?		(Yes)	No
17.	Were correct preservatives added to samples?		(Yes)	No
18.	Was a sufficient amount of sample sent for the tests indicated?		(Yes)	No
19.	Were bubbles absent from VOA samples? If NO, list by sample#		Yes	No N/A
20.	Was the project manager called and status discussed? If YES, give details on back.		Yes	(No)
21.	Who was called: by whom date			

Cooler # 4 (ASI 1403)

Cooler Receipt Form

Number of Coolers: 1 LIMS # 107713 Date Received: 5/7/99

Project: Hunter LTM, Project # 019457

Use other side of this form to note details concerning check-in problems

A. Preliminary Examination Phase: Date cooler was opened: 5/7/99

by (print): W. Ryan Diver (sign) [signature]

1.	Did cooler come with a shipping slip (airbill, etc.)?		Yes	(No)
	If YES, then enter carrier name and airbill number here:			
2.	Were custody seals on outside of cooler?		Yes	(No)
	How many & where: , seal date: , seal name:			
3.	Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	N/A
4.	Did you screen samples for radioactivity using a Geiger counter?	(Yes)	No	
5.	Were custody papers sealed in a plastic bag & taped inside to the lid?	Yes	(No)	
6.	Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	
7.	Did you sign custody papers in the appropriate place?	(Yes)	No	
8.	Was project identifiable from custody papers?	(Yes)	No	
	If YES, enter project name at the top of this form.			
9.	If required, was enough ice used? Type of Ice: bagged	(Yes)	No	
10.	Have designated person initial here to acknowledge receipt of cooler: [initials] (date): 5/7/99			

B. Log-in Phase: Date samples were logged-in: 5/7/99

by (print): Joseph C. Mueller (sign) [signature]

11.	Describe type of packing in cooler: bagged ice / bubble wrap			
12.	Were all bottles sealed in separate plastic bags?		Yes	(No)
13.	Did all bottles arrive unbroken and were labels in good condition?	(Yes)	No	
14.	Were all bottle labels complete (ID, date, time, signature, preservative, etc.)?	(Yes)	No	
15.	Did all bottle labels agree with custody papers?	(Yes)	No	
16.	Were correct containers used for the tests indicated?	(Yes)	No	
17.	Were correct preservatives added to samples?	(Yes)	No	
18.	Was a sufficient amount of sample sent for the tests indicated?	(Yes)	No	
19.	Were bubbles absent from VOA samples? If NO, list by sample#_____	Yes	No	N/A
20.	Was the project manager called and status discussed? If YES, give details on back.	Yes	(No)	
21.	Who was called: by whom date			

cooler #5 (ASI 1164)

Cooler Receipt Form

Number of Coolers: 1 LIMS # 107713 Date Received: 5/7/99

Project: Hunter LTM, Project # 019457

Use other side of this form to note details concerning check-in problems

A. Preliminary Examination Phase: Date cooler was opened: 5/7/99

by (print): W. Ryan Diver (sign) [signature]

1.	Did cooler come with a shipping slip (airbill, etc.)?		Yes	(No)
	If YES, then enter carrier name and airbill number here:			
2.	Were custody seals on outside of cooler?		Yes	(No)
	How many & where: , seal date: , seal name:			
3.	Were custody seals unbroken and intact at the date and time of arrival?	Yes	No	N/A
4.	Did you screen samples for radioactivity using a Geiger counter?	(Yes)	No	
5.	Were custody papers sealed in a plastic bag & taped inside to the lid?	Yes	(No)	
6.	Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No	
7.	Did you sign custody papers in the appropriate place?	(Yes)	No	
8.	Was project identifiable from custody papers?	(Yes)	No	
	If YES, enter project name at the top of this form.			
9.	If required, was enough ice used? Type of Ice: bagged	(Yes)	No	
10.	Have designated person initial here to acknowledge receipt of cooler: [initials] (date): 5/7/99			

B. Log-in Phase: Date samples were logged-in: 5/7/99

by (print): Joseph C. Mueller (sign) [signature]

11.	Describe type of packing in cooler: bags ice / bubble wrap			
12.	Were all bottles sealed in separate plastic bags?		Yes	(No)
13.	Did all bottles arrive unbroken and were labels in good condition?	(Yes)	No	
14.	Were all bottle labels complete (ID, date, time, signature, preservative, etc.)?	(Yes)	No	
15.	Did all bottle labels agree with custody papers?	(Yes)	No	
16.	Were correct containers used for the tests indicated?	(Yes)	No	
17.	Were correct preservatives added to samples?	(Yes)	No	
18.	Was a sufficient amount of sample sent for the tests indicated?	(Yes)	No	
19.	Were bubbles absent from VOA samples? If NO, list by sample#	Yes	No	N/A
20.	Was the project manager called and status discussed? If YES, give details on back.	Yes	(No)	
21.	Who was called: by whom date			

cooler # 9 (1683)

Cooler Receipt Form

Number of Coolers: 1 LIMS # 107713 Date Received: 5/7/99

Project: Hunter LTM, Project # 019457

Use other side of this form to note details concerning check-in problems

A. Preliminary Examination Phase: Date cooler was opened: 5/7/99

by (print): W. Ryan Diver (sign) [signature]

1.	Did cooler come with a shipping slip (airbill, etc.)?	Yes	(No)
	If YES, then enter carrier name and airbill number here:		
2.	Were custody seals on outside of cooler?	Yes	(No)
	How many & where: , seal date: , seal name:		
3.	Were custody seals unbroken and intact at the date and time of arrival?	Yes	No N/A
4.	Did you screen samples for radioactivity using a Geiger counter?	(Yes)	No
5.	Were custody papers sealed in a plastic bag & taped inside to the lid?	Yes	(No)
6.	Were custody papers filled out properly (ink, signed, etc.)?	(Yes)	No
7.	Did you sign custody papers in the appropriate place?	(Yes)	No
8.	Was project identifiable from custody papers?	(Yes)	No
	If YES, enter project name at the top of this form.		
9.	If required, was enough ice used? Type of Ice: bagged	(Yes)	No
10.	Have designated person initial here to acknowledge receipt of cooler: [initials] (date): 5/7/99		

B. Log-in Phase: Date samples were logged-in: 5/7/99

by (print): Joseph C. Mueller (sign) [signature]

11.	Describe type of packing in cooler: bagged ice / bubble wrap		
12.	Were all bottles sealed in separate plastic bags?	Yes	(No)
13.	Did all bottles arrive unbroken and were labels in good condition?	(Yes)	No
14.	Were all bottle labels complete (ID, date, time, signature, preservative, etc.)?	(Yes)	No
15.	Did all bottle labels agree with custody papers?	(Yes)	No
16.	Were correct containers used for the tests indicated?	(Yes)	No
17.	Were correct preservatives added to samples?	(Yes)	No
18.	Was a sufficient amount of sample sent for the tests indicated?	(Yes)	No
19.	Were bubbles absent from VOA samples? If NO, list by sample#:	Yes	No N/A
20.	Was the project manager called and status discussed? If YES, give details on back.	Yes	(No)
21.	Who was called: by whom date		

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

M&E Metcalf & Eddy

SAMPLED BY: DH/WV

WELL ID: 728-MW1

PROJECT NAME: HAAF Qtr Sampling

LOCATION: B.728

Date sampled: 5/5/95 Time start 1520 End 1525

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 4.04 ft

3. Depth of well from T.O.C. 13.2 ft

4. Feet of standing water (h) 9.16 ft

1. Standing water (gal.) = 1.5

2. X 3 well volumes

3. = 4.6 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	1.5 gal.	5.65	232	21.0 C
2.Well volume =	3.0 gal.	5.80	240	20.6
3.Well volume =	4.6 gal.	5.90	239	20.7
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation - ____

Sample Description ____

Odor: None

Color: Lt. Br.

Appearance: Turbid

Weather Conditions: Cloudy, 15's breeze

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ____ ppm

COMMENTS: ____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH / W.V. WELL ID: 728-MW6

PROJECT NAME: HAAF Qtr Sampling LOCATION: B. 728

Date sampled: 5/3/99 Time start 1450 End 1545 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 5.95 ft
3. Depth of well from T.O.C. 12.9 ft
4. Feet of standing water (h) 6.95 ft

1. Standing water (gal.) = 1.2
2. X 3 well volumes
3. = 3.5 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.2 gal.	5.85	703	21.3 C
2. Well volume =	2.4 gal.	5.91	713	21.2
3. Well volume =	3.5 gal.	DRY		
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation -

Sample Description

Odor: Str. HC odor

Color: br

Appearance: turbid

Weather Conditions: cloudy, sl. breeze

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS: MS / MSD

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH/WV

WELL ID: 728-MW11

PROJECT NAME: HAAF Qtr Sampling

LOCATION: B.728

Date sampled: 5/5/99 Time start _____ End _____

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 6.74 ft

3. Depth of well from T.O.C. 12.3 ft

4. Feet of standing water (h) 5.56 ft

1. Standing water (gal.) = 0.9

2. X 3 well volumes

3. = 2.8 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14 [(0.17 \text{ ft.})^2 \div 4] (\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal / ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	0.9 gal.	5.31	56	20.4
2.Well volume =	1.8 gal.	5.38	56	20.3
3.Well volume =	2.8 gal.	DRY AT 1.5 GAL		
4.Well volume =	_____ gal.			
5.Well volume =	_____ gal.			
Ground water sample	_____			

Sampling method - Disposable Teflon Bailer

Field preservation - _____

Sample Description _____

Odor: HC odor

Color: Olive Br

Appearance: turbid

Weather Conditions: overcast, sl. breeze warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: _____ ppm

COMMENTS: _____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH / W.V. WELL ID: 728-MW60

PROJECT NAME: HAAF Qtr Sampling LOCATION: B.728

Date sampled: 5/5/99 Time start 1615 End 1620 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 7.44 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) 5.56 ft

1. Standing water (gal.) = 0.9
2. X 3 well volumes
3. = 2.8 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal / ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	0.9 gal.	5.64 5.30 DH	255 90 DA	20.9 20.4 DH C
2.Well volume =	1.8 gal.	5.84	319	20.9
3.Well volume =	2.8 gal.	5.88	315	21.0
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation - ____

Sample Description ____

Odor: Hc

Color: Br

Appearance: Turbid

Weather Conditions: Overcast, warm.

Air Monitoring Equipment used: OVA

Reading: Breathing zone: Øppm

In Well: ppm

COMMENTS: ____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH / WV

WELL ID: 728-MW61

PROJECT NAME: HAAF Qtr Sampling

LOCATION: B.728

Date sampled: 5/5/99 Time start 1600 End 1605

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 7.37 ft

3. Depth of well from T.O.C. 13.0 ft

4. Feet of standing water (h) 5.63 ft

1. Standing water (gal.) = 0.9

2. X 3 well volumes

3. = 2.8 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{ gal}$

		pH	Conductivity	Temperature, (F)
1.Well volume =	0.9 gal.	5.30	90	20.4 °C
2.Well volume =	1.8 gal.	5.44	106	20.4
3.Well volume =	2.8 gal.	5.53	114	20.4
4.Well volume =	gal.			
5.Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation - ____

Sample Description ____

Odor: HC odor

Color: Br

Appearance: turbid

Weather Conditions: overcast

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ____ ppm

COMMENTS: ____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH / W.J. WELL ID: 728-MW63

PROJECT NAME: HAAF Qtr Sampling LOCATION: B.728

Date sampled: 5/5/99 Time start 1645 End ____ Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 7.50 ft
3. Depth of well from T.O.C. 14.0 ft
4. Feet of standing water (h) 6.5 ft

1. Standing water (gal.) = 1.1
2. X 3 well volumes
3. = 3.3 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal / ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.1 gal.	4.92	76	20.3
2. Well volume =	2.2 gal.	5.35	76	~~19.9~~ 20.1
3. Well volume =	3.3 gal.	5.37	75	20.1
4. Well volume =	____ gal.			
5. Well volume =	____ gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation - ____

Sample Description ____

Odor: HC

Color: Lt. Br.

Appearance: turbid

Weather Conditions: overcast, warm.

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ____ ppm

COMMENTS: ____

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH / W.V. WELL ID: 728-MW64

PROJECT NAME: HAAF Qtr Sampling LOCATION: B.728

Date sampled: 5/5/99 Time start 1630 End 1635 Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft
2. Depth of water from T.O.C. 6.12 ft
3. Depth of well from T.O.C. 13.0 ft
4. Feet of standing water (h) 6.88 ft

1. Standing water (gal.) = 1.1
2. X 3 well volumes
3. = 3.4 gallons to purge
4. Purging Method Waterra Pump

CALCULATION:
Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.1 gal.	4.46	43	20.8
2. Well volume =	2.2 gal.	5.31	45	20.5
3. Well volume =	3.4 gal.	5.35	43	20.5
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer Field preservation -

Sample Description

Odor: HC

Color: Lt. Br

Appearance: turbid

Weather Conditions: overcast, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

FIELD LOG BOOK SAMPLING DATA:
GROUNDWATER MONITORING WELL WORK SHEET

SAMPLED BY: DH / W.V.

WELL ID: 728-MW65

PROJECT NAME: HAAF Qtr Sampling

LOCATION: B.728

Date sampled: 5/5/99 Time start 1105 End 1110

Well secured upon arrival? (Y) N

1. Casing Diameter (d) 2 inches ÷ 12 = 0.17 ft

2. Depth of water from T.O.C. 7.21' ft

3. Depth of well from T.O.C. 13.0 ft

4. Feet of standing water (h) 5.79 ft

1. Standing water (gal.) = 1.0

2. X 3 well volumes

3. = 2.9 gallons to purge

4. Purging Method Waterra Pump

CALCULATION:

Standing water volume $= \pi[(d)^2 \div 4](h)$

$= 3.14[(0.17 \text{ ft.})^2 \div 4](\_\_\_\_ \text{ft.}) \times 7.48 \text{ gal/ft.}^3 = \_\_\_\_ \text{gal}$

		pH	Conductivity	Temperature, (F)
1. Well volume =	1.0 gal.	5.53	165	21.6
2. Well volume =	2.0 gal.	5.77	166	21.5
3. Well volume =	2.9 gal.	5.75	166	21.4
4. Well volume =	gal.			
5. Well volume =	gal.			
Ground water sample				

Sampling method - Disposable Teflon Bailer

Field preservation -

Sample Description

Odor: None

Color: Lt. Br.

Appearance: sl. turbid

Weather Conditions: overcast, warm

Air Monitoring Equipment used: OVA

Reading: Breathing zone: 0 ppm

In Well: ppm

COMMENTS:

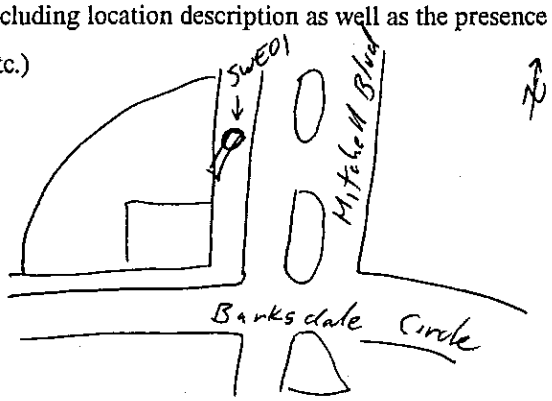
FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

Metcalf & Eddy

Date 5/5/99 Location 728 - SWE01

Samplers Used SS bowl

Drawing of sampling location (including location description as well as the presence of debris, surface sheens, recent excavations, vegetation, etc.)



No Soil Sample Only Surface Water

Weather

Soil/sediment sampling parameters: 8260 (8021) 8100 (8310) 8270 GRO DRO PPM RCRA 8080

Description of sample

Time of sample collection 1120

OVA Readings

Depth of water (for sediment sampling)

Decontamination (page number references) Work plan p A10-2

Spoons or spatulas

Trowel

Hand corer

Hand auger

Bowls ✓

Split spoons

Photograph frame numbers NA

Signature of field team personnel making data entry D. Humphrey

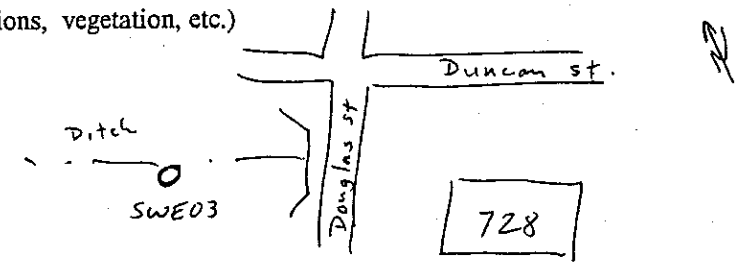
FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

Metcalf & Eddy

Date 5/5/99 Location 728 SWE03

Samplers Used ss bowl, ss spoon, encore

Drawing of sampling location (including location description as well as the presence of debris, surface sheens, recent excavations, vegetation, etc.)



Weather Overcast, rainy, warm

Soil/sediment sampling parameters: 8260 (8021) 8100 (8310) 8270 (GRO) (DRO) PPM RCRA 8080

Description of sample Lt. Br. Sand Lots of organics

Time of sample collection 1030

OVA Readings NA

Depth of water (for sediment sampling) 3"

Decontamination (page number references) Workplan p A/O-2

Spoons or spatulas ✓

Trowel

Hand corer

Hand auger

Bowls ✓

Split spoons

Photograph frame numbers —

Signature of field team personnel making data entry D. Humphrey

APPENDIX IV

SITE RANKING RESULTS

SITE RANKING FORM

Facility Name: Former Building 728 **Ranked by:** G. Rowell
County: Chatham **Facility ID#:** 9025035 and 9025049 **Date Ranked:** 6/3/99

SOIL CONTAMINATION

A. Total PAHs -
Maximum Concentration found on the site (Assume <0.660 mg/kg if only gasoline was stored on site)

- ☐ ≤ 0.660 mg/kg = 0
- ☐ > 0.66 - 1 mg/kg = 10
- ☐ > 1 - 10 mg/kg = 25
- ■ > 10 mg/kg = 50

B. Total Benzene -
Maximum Concentration found on the site

- ☐ ≤ 0.005 mg/kg = 0
- ☐ > 0.005 - .05 mg/kg = 1
- ■ >.05- 1 mg/kg* = 10
- ☐ > 1-10 mg/kg = 25
- ☐ > 10 - 50 mg/kg = 40
- ☐ > 50 mg/kg = 50

C. Depth to Groundwater
(bls = below land surface)

- ☐ > 50' bls = 1
- ☐ > 25'-50' bls = 2
- ☐ > 10'-25' bls = 5
- ■ ≤10 bls = 10

Fill in the blanks: (A. 50) + (B. 10) = (60) x (C. 10) = (D. 600)

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See guidelines for definition of "sheen").

- ☐ No free product = 0
- ☐ Sheen - 1/8" = 250
- ☐ > 1/8" - 6" = 500
- ■ > 6" - 1 ft = 1,000
- ☐ For every additional inch, add another 100 points = 1,000 + _____

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release)

- ☐ ≤ 5 ug/L = 0
- ☐ > 5 - 100 ug/L = 5
- ☐ > 100- 1,000 ug/L = 50
- ■ > 1,000-10,000 ug/L = 100
- ☐ > 10,000 ug/L = 250

Fill in the blanks: (E. 1000) + (F. 100) = (G. 1100)

*Two samples had detection levels <60 mg/kg due to dilutions.

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤ 500'	= 500
☐	> 500' - ¼ mi	= 25
☐	> 1/4 mi – 1 mi	= 10
☐	> 1 mi - 2 mi	= 2
■	> 2 mi	= 0
	For lower susceptibility areas only:	
☐	> 1 mi	= 0

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤ 100'	= 500
☐	> 100' - 500'	= 25
☐	> 500' mi - 1/4 mi	= 5
☐	> 1/4 mi - 1/2 mi	= 2
■	> 1/2 mi	= 0
	For lower susceptibility areas only:	
☐	> 1/4	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULTS** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table.

☐	Impacted	= 500
■	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
☐	> 1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	≤ 500'	= 50
☐	> 500' - 1,000'	= 5
■	> 1,000' or no free product	= 0

Fill in the blanks: =(H. 0) + (I. 0) + (J. 50) + (K. 0) = L. 50

(G. 1100) x (L. 50) = M. 55,000

(M. 55,000) + (D. 600) = N. 55,600

P. SUSCEPTIBILITY AREA MULTIPLIER

☐ If site is located in a low Groundwater Pollution Susceptibility Area - 0.5

■ All other sites = 1

Q. EXPLOSION HAZARD

Have any explosion vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

■ No = 0

Fill in the blanks: (N. 55,600) x (P. 1) = (L. 55,600) + (Q. 0)

= 55,600

The following information is presented to provide supplemental information to Item H of the Site Ranking Form and provides detailed information relating to the geologic and hydrogeologic conditions at Hunter Army Airfield, which supports Hunter Army Airfield's determination that the water withdrawal point(s) located at Hunter Army Airfield are not hydraulically connected to the surficial aquifer.

1.0 REGIONAL AND LOCAL GEOLOGY

Hunter Army Airfield is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line located approximately 350 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4,254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1,970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2,170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations.

The surface soil located throughout the Hunter Army Airfield garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more.

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Hunter Army Airfield is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet BGS (Geraghty and Miller 1993). The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not encountered during drilling at this site but is believed to be located at 40 to 50 feet BGS; thus, the effective aquifer thickness would be approximately 35 to 45 feet. Soil surveys for Liberty and Long Counties describe the occurrence of a perched water table within the Stilson loamy sands present within Hunter Army Airfield (Looper 1980).

The confining layer for the Principal Artesian aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 feet. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited

utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie Formation, Markshead Formation, and Parachula Formation, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 feet thick in the Savannah Georgia area. This unit disconformably overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Markshead Formation is approximately 70 feet thick in the Savannah Georgia area and consists of light-colored phosphatic, slightly dolomitic, argillaceous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

The Parachula Formation consists of sand, clay, limestone, and dolomite, and is approximately 10 feet thick in the Savannah Georgia area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

Groundwater encountered at all the underground storage tank investigation sites is part of the Surficial Aquifer system. Based on the fact that all public and non-public water supply wells draw water from the Principal (Floridan) Aquifer, and that the Hawthorn confining unit separates the Principal Aquifer from the Surficial Aquifer, it is concluded that there is no hydraulic interconnection between the Surficial Aquifer (and associated groundwater plumes, if applicable) located beneath former UST sites and identified water supply withdrawal points at Hunter Army Airfield.

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