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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:

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November 1999

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

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REFERENCES

Metcalf & Eddy, Inc., <u>Final Corrective Action Plan-Part A</u>, <u>Phase I Site Investigation</u> 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.

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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

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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

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MONITORING ONLY REPORT

Submittal Date:October 7, 1998Monitoring Report Number:01For Period Covering:May 1998toJuly, 1998

| Submitted by UST Owner/Operator: | Prepared by Consultant/Contractor: |
|---|---------------------------------------|
| Name: Mr. Tom Fry | Name: David Wilderman |
| Company: HQs, 3d ID (Mech) & Fort Stewart | Company: Metcalf & Eddy, Inc. |
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| City: Fort Stewart State: GA | City: <u>Atlanta</u> State: <u>GA</u> |
| Zip Code: 31314-4928 | Zip Code: 30361 |
| Telephone: 912-767-1078 | 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: Stud |
| Date: 10.6.98 |



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.

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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. <u>Potentiometric Data</u>:

Tabulate all data and illustrate <u>last 2</u> 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. <u>Analytical Data</u>:

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)

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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 μ g/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 μ g/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 μ g/L and 487 to 2850 μ g/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 μ g/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 μ g/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 μ g/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 <u>N/A</u>

(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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FIGURE 4

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

| | | | | BENZENE RI | SULTS (ug/L) | | | | |
|--------|-------|----------|----------|------------|--------------|----------|----------|-----------|----------|
| WELL # | CAP-B | 1'st QTR | 2'nd QTR | 3'rd OTR | 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 | | | | | | | |



| | Chatha | Fc Ha | ormer Building unter Army Air | | 25049 | · · · · · · · · · · · · · · · · · · · |
|--------------|-----------|-----------|----------------------------------|-------------|------------|---------------------------------------|
| | Screen | Water | тос | Water Level | Surface | Free Prod. |
| Location | Interval | Depth, | Elevation, | Elevation, | Elevation, | Thickness |
| САР-А | ft, bgs | TOC | ft, msl | ft, msl | ft, msl | ft. |
| 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 | |
| MW02 MW03 | 2.6-12.6 | 5.79 | 20.80 | 15.01 | 20.8 | |
| MW03 | 3.4-13.4 | Destroyed | 3/97 | 15.01 | 21.1 | |
| 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-mcan sea level

Measurements on 7/29/98

NA- not measured

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

TABLE 2 : GROUNDWATER ANALYTICAL RESULTS

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xvlenes | TOTAL BTEX | TOTAL PAH |
|-------|---------|-------------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | ТҮРЕ | (I/6n) | (l/ɓn) | (l/ɓn) | (l/gn) | (I/gn) | (I/gn) |
| MW01 | 7/29/98 | Primary | D | n I | n | م ا | | 0.4 |
| MW06 | 7/29/98 | Primary | D | ო | 21 | 5 | 24 | 7.6 |
| MW11 | 7/29/98 | Primary | 95 | C | 23 | 120 | 238 | 1.3 |
| MW11 | 7/29/98 | Duplicate 1 | 59 | D | 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 | Э | ⊃ | Ð | D | D | 0.6 |
| ARARS | | IWQS | 71.28 | 200,000 | 28,718 | • | | |

U = Not Detected.

(-) = No IWQS listed.

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|--------|---------|-----------|---------|---------|--------------|----------|------------|-----------|
| SITE | DATE | TYPE | (I/6n) | (I/gu) | (I/gn) | (I/gn) | (I/6n) | (I/6n) |
| SW0102 | 7/30/98 | Primary | 2.9 | n | n I | | 2.9 | 0.2 |
| SW1002 | 7/30/98 | Duplicate | м , | 2 | D | D | 5.0 | 0.9 |
| SW0302 | 7/30/98 | Primary | D | D | C | 5 | S | 0.5 |
| ARARS | | | 71.28 | 200,000 | 28,718 | 1 | | |

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

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TABLE 4 : SEDIMENT ANALYTICAL RESULTS

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|--------|---------|-----------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | ТҮРЕ | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| SE1002 | 7/30/98 | Duplicate | D | n | n | n | Ο | n |
| SE0302 | 7/30/98 | Primary | D | c | D | כ | D | D |
| ARARS | | STL | 0.017 | 115 | 18 | 700 | | |
| | | | | | | | | |

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

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

| | SITE | 7280001 | 7280006 | 728MW71 | 1728ABANT1 | 728MMR0 | 728MW61 |
|--|-------------|---|--------------|------------------------|------------------------|------------|------------|
| CONSTITUENT (Units in ug/L) S | 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 | 560 | 220 |
| Ethylbenzene | | <2 | 21 | 23 | 14 | 700 | 120 |
| Xylene (total) | | цо V | С И | 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 |
| | | | - | - | |] | ŀ |
| 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 | 23J | <0.103 | 0.13 | 0.86 | 06.0 |
| 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 | I | = Not analyzed | | | |
| EPA METHODS:8020,8310. For RCL 8000ABAS | ABASI | | J = RESULT I | = RESULT IS ESTIMATED. | R = RESULT IS REJECTED | ECTED. | |

of 1B Page: 1B

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

| 0 | SITE | 728MW63 | 728MW64 | 728MW65 | 728SWE01 | 728SWE01 | 728SWE03 |
|--|-------------|---|------------|----------------------|------------------------|-------------|------------|
| CONSTITUENT (Units in ug/L) S | SAMPLE ID | 728-MW6302 | 728-MW6402 | 728-MW6502 | 728-SW0102 | 728-SW1002 | 728-SW0302 |
| | DATE | 86/62/20 | 86/62/20 | 07/29/98 | 07/30/98 | 07/30/98 | 07/30/98 |
| UL. | RESULT TYPE | Primary | Primary | Primary | Primary | Duplicate 1 | Primary |
| Benzene | | 930 | 450 | <2 | 2.9 | 3.0 | <2 |
| Toluene | | 74 | 680 | <2 | 2 2 | 2.0 | <2 |
| Ethylbenzene | | 92 | 220 | <2 | <2 | <2 | <2 |
| Xylene (total) | | 510 | 1500 | <55 | <5 | <5 | Z5 |
| 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 | A10 |
| | | ł | | | | | [|
| Acenapitthene | | <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)peryiene | | <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 | 1 | =Not analyzed | | | |
| EPA METHO 220,8310. For RCL 8000ABASI | ABASI | | RESULT | RESULT IS ESTIMATED. | r = result is rejected | IECTED. | () () |

| | HU LONG TERN | HUNTER ARMY AIRFIELD G TERM MONITORING - BUILDING 728 PRIMARY RESULTS SEDIMENT SAMPLES | Page: 1A of 1A |
|--|---|--|----------------------|
| SITE SAMPLE ID SAMPLE ID DATE DEPTH (f) RESULT TYPE | 7285WE03 728-SE0302 07/30/98 0.00 Primary | 7285WED3 728-SE1002 07/30/98 0.00 Duplicate 1 | |
| Benzene <0.0063 | <0.0063 <0.0063 <0.0063 <0.0063 | <0.0064 <0.0064 <0.0064 <0.0064 <0.0064 | |
| Acenaphthene Acenaphthylene Anthracene | - ~ ~ ~ ~ 1.3 *1.3 *1.3 | 1 2 2 3 2 3 3 3 3 4 2 | |
| | <1.3 <1.3 <1.3 | <1.3 <1.3 <1.3 <1.3 | |
| benzo(g)tiperylene Benzo(k) fluoranthene Chrysene Dibenzo(a. h) anthracene | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | <13 <1.3 <1.3 1.3 1.3 | |
| Fluoranthene Fluorene Indeno 1, 2, 3 c, d)pyrene Nuo-kitkolooo | | 512 515 515 515 515 515 515 515 515 515 | |
| | 4.5 4.3 23 563 | ∧ ≺13 864 864 | |
| s represent total concentrations unless noted METHODS:8020,8310,DRO,GRO. For RCL 80 | dicat | = Not analyzed ESULT IS ESTIMATED | = result is rejected |

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| FIELD | | RES | | SAMPLE | SAMPLE SAMPLE DATE LAB | DATE LAB | ANALYSES | and the second se | | | COMMENTS QAOC |
|---------------|----------|--------|-----------------|---------|------------------------|----------|-------------------|---|-----------|-------------|------------------|
| SAMPLEID | SITEID | CODE | CODE MATRIX | DATE | TIME | RECEIVED | VOC/8020 PAH/8310 | | GRO/8015M | DRO/8100M | SAMPI F TVPFS |
| GROUNDWATER | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 728-EB01 | 728MW01 | BR11 | WATER | 7/29/98 | 1410 | 7/30/98 | × | × | - | | EQUIPMENT BI ANK |
| 728-MW0102 | 728MW01 | PP01 | WATER | 7/29/98 | 1415 | 7/30/98 | × | × | | | |
| 728-MW0602 | 728MW06 | PP04 | WATER | 7/29/98 | 1455 | 7/30/98 | × | × | | | |
| 728-MW0602MS/ | 728MW06 | SL11 | WATER | 7/29/98 | 1455 | 7/30/98 | (× | (× | | | Mc |
| MSD | 728MW06 | DL11 | WATER | 7/29/98 | 1455 | 7/30/98 | : × | (× | | | |
| 728-MW1102 | 728MW11 | PP01 | WATER | 7129/98 | 1635 | 7/30/98 | < × | < × | | | |
| 728-MW8002 | 728MW11 | PD11 | WATER | 7/29/98 | 1635 | 7/30/98 | × × | (× | | | |
| 728-MW6002 | 728MW60 | PP01 | WATER | 7/29/98 | 1600 | 7/30/98 | × | (× | | | |
| 728-MW6102 | 728MW61 | PP01 | WATER | 7/29/98 | 1600 | 7/30/98 | × | × | | | |
| 728-MW6302 | 728MW63 | PP01 | WATER | 7/29/98 | 1630 | 7/30/98 | × | × | | | |
| 728-MW6302 | 728MW63 | PS11 | WATER | 7/29/98 | 1630 | 7/30/98 | × | × | | | SPLIT |
| 728-MW6402 | 728MW64 | PP04 | WATER | 7/29/98 | 1530 | 7/30/98 | × | × | | | |
| 728-MW6502 | 728MW65 | PP01 | WATER | 7/29/98 | 1725 | 7/30/98 | × | × | | | |
| | | | | | | | | | | | |
| SURFACEWATER | | | | | | | | | | | |
| SEDIMENT | | | | | | | | | | | |
| | | | | | | | | | | | |
| /28-SW0102 | /ZBSWE01 | | WATER | 7/30/98 | 0810 | 7/30/98 | × | × | | | |
| 728-SW1002 | 728SWE01 | | WATER | 7/30/98 | 0810 | 7/30/98 | × | × | | | DUPLICATE |
| 728-SE0102 | 728SWE01 | | SEDIMENT | 7/30/98 | 0810 | 7/30/98 | × | × | × | × | |
| 728-SW0302 | 728SWE03 | | WATER | 7/30/98 | 0060 | 7/30/98 | × | × | _ | | |
| 728-SW0302 | 728SWE03 | | WATER | · | 0060 | 7/31/98 | × | × | | | SPLIT |
| 728-SE0302 | 728SWE03 | PP01 | SEDIMENT | 7/30/98 | 0920 | 7/30/98 | × | × | × | × | |
| 728-SE0302MS/ | 728SWE03 | 3 SL11 | SEDIMENT | 7/30/98 | 0920 | 7/30/98 | × | × | × | × | MS |
| MSD | 728SWE03 | | SEDIMENT | 7/30/98 | 0920 | 7/30/98 | × | × | × | × | MSD |
| 728-SE1002 | 728SWE03 | 8 PD11 | SEDIMENT | · . | 0920 | 7/30/98 | × | × | × | × | DUPLICATE |
| 728-SE0302 | 728SWE03 | 3 PS11 | SEDIMENT | 7/30/98 | 0320 | 7/31/98 | × | × | × | × | SPLIT |
| | | | | | | | | | | | |

p:VhazwasteVhunter1Vhquart9.wk1

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SP 9 STORED/SHIPPED IN ICE N/N STANDARD PRESERVATION (Y): LERS/METHODS 0 **~ 0** ž Cooler Temperature: $\triangleleft \exists \ \bigtriangledown \Box \varpropto O$ HCI/VOC, HNO₃/METALS 1 A. U Ø (7 ≁ σ PARAMET V Z o u s ī Ω F 1 H_SQ/ OTHER. S ANAI YTICAI CVAA CVAA GFAA ÐZ90 물 <u>8</u> 5000 NZ CH 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101 NOL 0208 >000 2 oN borteM Christine Hettinger c/o METCALF & EDDY, INC. 2# Æ FILTERED (L) LAB (F)FIELD Atlanta, Georgia 30361 (404) 881-8010, FAX (404) 872-3161 Date/Time: Я 20/00 STANPDARD I PRESERV (Y/N)* 2825まつ R 5.5 Lakor, ŕ NO. OF CONTS - CUSTODY - RECORD ŧ VOD 1 3 ഹ \mathcal{O} σ 3 3 \mathcal{O} \mathcal{C} m 3 3 3 Send Results to: R 13518 CV 03 DEPTH (FT) 9+618 A 813 0 Qtr. ı() SAMPLER(S) SIGNATURE: BR 11 PD01 PP01 ľ PPOI 10dd P6) RES PPOI PP01 PP01 PPOL 1961 37 days. leceived by: town TASK ORDER NO. SAMPLE EVENT: PROGRAM TYPE: 00 mm 4 FOUN. 017 728-MW64 710-5MWD 710-MW03 710-14002 728. MW06 710-54401 10mm - 82+ 718-mw 0] 710.10004 710-10101 SITE ID 2 Ю 728. Ò where we are t LTW 7.30-99 CHAIN Date/Time: 7200 MM - 824 2010mm.825 7/0-144031/ 7040W. 824 D.W. 1122 mm , 01± 728- MW0102 710~ MW0111 710- MW - 015 710-WW 0211 7110-504000111 TRACKING NO: 778-MW AIRBILL CO. 0 710-7802 FIELD SAMPLE ID PROJECT NAME: Hunter AAF 3 e12-249120 asm, hour , AJA MATRIX (SM) 3 3 3 3 3 3 3 3 3 3 3 3 VUSI 2980 0810 SAMPLER(S) NAME: TIME MILITARY のかたい 1600 60Z1 5141 1225 1410 1530 1215 212 1455 Metcalf & Edd LABORATORY ID: Relinquished by: PROJECT NO: (Signature) 4-29-91 Remarks: DATE $\overset{}{}$

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| Metcalf | 8 Eddu |
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SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.

| C Halfman | FAX # (404) 872-3161 |
|--|----------------------|
| METCALF & EDDY Representative | 11 to set to |
| SUBCONTRACTOR ASI | |
| SAMPLE CUSTODIAN () alughle there | TODAY'S DATE |
| DATE/TIME SAMPLES RECEIVED _73098 16.15 | |
| | NO. OF COOLERS |
| COOLER OPENED: DATE TIME | <u></u> |
| CHAIN OF CUSTODY SEAL INTACT? YES NO | |
| | |
| SAMPLE LABELS PRESENT? YES NO | |
| BOTTLE LABELS CORRESPOND W/COC? YES NO | - · · · · · |
| TYPE OF COLLANT USED | |
| COOLANT CONDITION: MELTED PARTIA | ALLY MELTED/FROZEN |
| FROZEN | N |
| COOLER NUMBER $\# - 1459$ TEMP I | |
| # | · |
| # | |
| # | |
| # | |
| RECORD TEMPERATURE BLANK (1) (2) (2) | (3) |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING (INTACT | |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES A | AFFECTED |
| | |
| | |
| | |
| LIST SAMPLE ID'S IN EACH SHIPMENT: 710 - TBO 2 | TIO-SMWOILI - MWO |
| | WOIII - MWOCIL |
| 130-749728-EB01 - MWD0102,-M | MUGOZ - MW GOUL THE |
| 728-MW2002 - MW20302, -MW21 | |
| 728-5W1002 - 5WUUE - 5W | |

| ANALYTICAL PARAME JANALYTICAL PA | 01 E& | L2- /- | -3-6 | | 27 | 23 | | | Cooler Temperature: | te 1101 STANDARD PRESERVATION (Y): (H) HCI/VOC, (N) HNOs/METALS (S) H ₂ SQ,/ (O) 0THER STORED/SHIPPED IN ICE |
|--|--|--|-----------------------------|--------------------------------------|------------|------------------------------------|---------------|--|--|---|
| CHAIN - OF - CUSTODY - RECORD Metadiacidy PROJECT NAME: MALE PROJECT NAME: MALE TWO PROSEND: MALE TWO PROSEND: MALE TWO MALENCINA CHAIN Description MALE TANDIE MALENCINA | DATE TIME MATRIX RELD SITE RES DEPTH NO OF STANDARD FILTERED NO OF PRESERV (1)1AB (1)1 | N 2 1060 W 210-511 X 710-5110 PPOI W 2012 1 200 V 2 10 1200 V 2 1000 V 2 | w 710. MW0311 710-WW03 PP01 | 1225 W 710-MW2211 710-MW03 PDO1 7 1/ | 710~WW0211 | V 1310 W 728-6801 728-1100/ DN 2 N | \mathcal{H} | | Relinquished by: Relinquished by: (Signature) D. Rougel 27-30-98/16/5 Deterved by: Date/Time: Date | AIRBILL CO. AIRBILL CO. AIRBILL CO. THAT AIRBILL CO. TRACKING NO: (404) 881-80 |

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SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

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

| METCALF & EDDY Representative | FAX # (404) 872-3161 |
|---|---|
| SUBCONTRACTOR ASI | PROJECT # <u>Hunter LTM</u> |
| SAMPLE CUSTODIAN (m) an falle de han | TODAY'S DATE |
| DATE/TIME SAMPLES RECEIVED _730/98 16115_ | |
| AIRBILL NUMBERA | NO. OF CCOLERS |
| COOLER OPENED: DATE TIME TIME | |
| 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 | · |
| COOLANT CONDITION: MELTED PARTIAL | Y MELTED/FROZEN |
| FROZEN | |
| LUS CONTEMP INS | |
| COOLER NUMBER # TY 3 COOLER NUMBER | |
| # | |
| # | |
| # | |
| # | (3) |
| | |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?) | |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFT | ECTED |
| | |
| | |
| LIST SAMPLE ID'S IN EACH SHIPMENT: TIO - SMWOIL | 1 - MWOHIL - MWO3U |
| TIO-MWZZH, - MWOIII, - MU | $\Delta U \subset U $ |
| | |
| | |

| · | & Eddy |
|---|---------|
| | Metcalf |

12310#0M CHAIN - OF - CUSTODY - RECORD LT W PROJECT NAME: HALF

METHODS

ANALYTICAL PARAMET

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GFAA

5 6103 Q+ 1. TASK ORDER NO. SAMPLE EVENT:

1

Olar SIGNATURE: μi

| LABORATORY ID: 4) + SAMPLER(S) NAME: 2. Rewell D. W. Heyman SAMPLER(S) SI |
|--|
|--|

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021974-4103

PROJECT NO:

| | 1 | -1351-36MJ-3 | -38- | - 30 | Ont / | | | | | | | | Cooler Temperature: | N | STANDARD PRESERVATION (Y): |
|---------------------------------|--------------|----------------|-------------|------------|-------------|------------------------|--------|------------------------|--------|-----------|--------|-----------|---------------------|--------------|----------------------------|
| B310. B310 | > | > | > | 7 |) | | | | | | | | | N91 | 1mm |
| FLTERED (L) LAB (F)FIELD | | | | | | | | | | | | | ine: | AL A | 23 6 |
| STANHDAHD Phesenv. (Y/N)* | N | X | N | N | N | | | | | | | | Date/Time: | N A | |
| NO. OF CONTS | 8 | 9 | 2 | Z | 2 | _ | | | | | | | | 1021 | ורידתא |
| DEPTH (FT) | \sum | | | | | $\left \right\rangle$ | \sum | $\left \right\rangle$ | \sum | \square | \sum | \square | 10 | A A | 5 |
| RES CODE | 1301 | PPo 1 | 1099 | Pop/ | PP01 | | | | | | | | Racelved by: | Jan | teref |
| STE ID | 728-mwo1 | 728 - mwole | 728 mw64 | 728-100000 | 728-10061 | | | | | | | | | 7-30-98/1615 | WI TO NUTI |
| RIELD SAMPLEID | 728-100002 | 72000mm -82E | 728- MW6402 | 728-MW6002 | 728-1446102 | | | | | | | | JU JU | | |
| RATRIX (SW) | З | З | З | S | M | | | | | | | | F | B. Konly | sm/s |
| IINE | 5/11 | 1455 | 1530 | /600 | 1600 | | | | | | | | à | J | Remarks: X WS/WSD |
| DATE | 5141 88-82-E | F 7-29-89 1455 | 0251 8-52-t | | 1 | 5 | | | | | | | Relinquished by: | 'a marifico' | Remarks: |

STORED/SHIPPED IN ICON

HCI/VOC, HNO3/METALS H_SQ4/ OTHER

EZOO

Christine Hettinger c/o METCALF & EDDY, INC. 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101

Cooles #4

Send Results to:

Atlanta, Georgia 30361 (404) 881-8010, FAX (404) 872-3161

TRACKING NO:

AIRBILL CO.

SIND



SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

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

| METCALF & EDDY Representative <u>C. Hettinger</u> | FAX # (404) 872-3161 |
|--|------------------------|
| SUBCONTRACTOR ASI | PROJECT # _ Honter LTM |
| SAMPLE CUSTODIAN Namable Shohoen | TODAY'S DATE |
| DATE/TIME SAMPLES RECEIVED 73098 16115 | |
| AIRBILL NUMBER | NO. OF COOLERS |
| COOLER OPENED: DATE _130/98 TIME _16:15 | |
| CHAIN OF CUSTODY SEAL INTACT? YES NO | |
| | |
| SAMPLE LABELS PRESENT? YES NO | |
| BOTTLE LABELS CORRESPOND W/COC7 YES NO | •••** •••• |
| TYPE OF COLLANT USED | <u></u> |
| COOLANT CONDITION: MELTED PARTIALL | Y MELTED/FROZEN |
| FROZEN | |
| COOLER NUMBER # 1458 TEMP INSI | DE COOLER _5 |
| # | |
| # | |
| # | |
| # | |
| | (3) |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING (INTACT?) |) |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFF | |
| <u>A}∂</u> | |
| | |
| | |
| LIST SAMPLE ID'S IN EACH SHIPMENT: 728 - MWOIDZ | = MUDDDZ, (|
| -728 - MW16402 - MW16002 | |
| | |
| | |

| ANALYTICAL PARAMET | <pre>K H P C C C C C C C C C C C C C C C C C C</pre> | . I \ O « | <u> </u> | шv | CVAA GFAA | 0158 | | | V + 3 | h+ | | | | | Cooler Temperature: | STANDARD PRESERVATION (Y): | 33£ | | |
|--------------------|--|---|---------------|---------|----------------------------|--|--|------------------|---------------------------------------|----------------------|--|--|--|--|----------------------------|---|-----|---|--|
| | | Metcali & Eddy PROJECT NAME: Hunter LTUL TASK ORDER NO. CV03 | 021924 - 4103 | ID: ASI | E: 6. Rowald D. W. Her now | DATE TIME WATHIX FIELD SITE RES DEPTH NO. OF STANDARD FILTERED NILITARY (SW) SAMPLEID ID CODE (FT.) CONTS (VIN) ¹ (FFIELD Met | N 2 1020 200 1050 200 225 2069 mm - 825 (m 069/ 8652-5 | 1635 W 728-MW102 | 1635 W 728-MW 8002 728-MW 11 PD11 2 N | W 728- MW6502 728- V | | | | | Received by: Date/Time: | Remarks: up up hod funds = 5° pH = 1/2 123 ceut | B | : | |

| ALYTICAL PARAMETERS/METHO | | ر ت م 2 – ۵ | > 0 | ш v | CVAA GFAA | | 01- | +20 | - 21 | +22 | -23 | h2+ | Q2- | -26 | | | Cooler Temperature: | Z | (H) HCI/VOC, (N) HNO,/METALS (S) H ₂ SQ/ (O) OTHER | 2 |
|---------------------------|----------------|-----------------------------------|-------------------------|--------------------|--|--|---------------------------|--------------------|------------------|--------------------|-------------------|-------------------|------------------|---------------------|--|--|---|------------------------------|---|--------------|
| | 000 | | | | | 07.06 | 2 | 7 | 7 | 7 | 2 | 7 | 7 | 7 | | | CON | 5 | uite 110 | |
| - OF - CUSTODY - RECORD | | TASK ORDER NO. $ \int VO \Im $ | 1 | PROGRAM TYPE: | der wan sampler(s) signature: D. Rowll | STE RES DEPTH NO. OF STANDARD FLITERED NO. DEPTH NO. OF PRESERV. (1) 1AB (1) 1 | 728-1410/6/00 PPO1 3 V | 728- MW63 PPO1 3 Y | 728-MW1 PP01 3 Y | 728. mull PD11 3 Y | 728-MW65 PPOI 3 Y | 728 Swo1 PD11 3 4 | 7285woi 8801 3 4 | 728-5w03 PP01 3 Y | | | 1615 Received by: Date Time: | PH - 1/2 - 12 | Christine Hettinger c/o METCALF & EDDY, INC. 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101 | 1 |
| CHAIN - | Metcalf & Eddy | PROJECT NAME: HAFF UT UN | PROJECT NO: 021974-4103 | LABORATORY ID: AST | 11: 3. Rowel D. W.1 | DATE TIME MATRIX FIELD MILITARY (SW) SAMPLE D | 7-29-58 1600 W 728-WW6102 | 1630 W 728-MW6302 | W 728-MW81102 | - | | ۱ ۱ | | V 0900 W 728-540302 | | | Relinquished by: (Signature) J. P. M. M. 7-30-98 | Remarks: UP Mon Down A March | AIRBILL CO. | TRACKING NO: |



SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

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

| | (1-1) 972-3161 |
|--|---------------------------------------|
| METCALF & EDDY Representative | FAX # (404) 872-3161 |
| SUBCONTRACTOR AST | PROJECT # |
| SAMPLE CUSTODIAN_Nouleally Augula | TODAY'S DATE |
| DATE/TIME SAMPLES RECEIVED _713098 6115 | |
| AIRBILL NUMBER | IN SHIPMENT |
| COOLER OPENED: DATE _730 98 TIME 16:15 | |
| CHAIN OF CUSTODY SEAL INTACT? YES NO | |
| | |
| SAMPLE LABELS PRESENT? YES NO | |
| BOTTLE LABELS CORRESPOND W/COC? YES NO |] - · · · · · · · · |
| TYPE OF COLLANT USED | |
| COOLANT CONDITION: MELTED PAR | TIALLY MELTED/FROZEN |
| FRO | ZEN |
| COOLER NUMBER #THEY | |
| # | |
| # | · · · · · · · · · · · · · · · · · · · |
| # | |
| # | |
| RECORD TEMPERATURE BLANK (1)(2) | (3) |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTA | ACT?)) |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPE | SAFFECTED |
| | |
| | |
| | 222 41.2 1102 |
| LIST SAMPLE ID'S IN EACH SHIPMENT: 728 - MWG | SO(mw)W(|
| -728-MW 8002, -MW 26507 | |
| | |
| | |

| Шŝ | |
|----|--|
| | |
| | |
| | |

| | | CHAIN | V - OF - CUSTODY | - YOO | RECORD | Ð | | - H | | P P | | | |
|---------------------------------|--------------------------|----------------------|----------------------------------|----------------|--|---|---|--------------------|---------------------------|----------------------------|----------------------|--|----------|
| call & Eddy | - | | | | #97 | 128L6#90 | , T | 000 | ×⊢∢ > 0 ∪ | ш к ю | U m | 2 O 2 | |
| PROJECT NAME: | HUNTER ARM | 4 ANRFI | APMY AIRFIELD LTH TASK ORDER NO. | | C \ 03 | - | | (. | | | | 0 4 | |
| ECT NO: 0.21 | PROJECT NO: 021974 4103 | | SAMPLE EVENT: | | QUARTERUY | | SAMPLING | 2/2/2 | 2 2 | | | | |
| LABORATORY ID: | | | PROGRAM TYPE: | (PE: | | | • | 80 | | ш N N N | | | |
| SAMPLER(S) NAME: U | D. HOWANNO / CI. | Li. Peweru | | SIGNATURÉ | \sim | Annall | \$ here | 908 | CVAA GFAA | | ₹ | 6 - C- OF | |
| DATE MILITARY | MATRIX ISM) SAMPLE ID | | STE D | RES CODE | DEPTH NC (FT.) CC | NO OF STANEDARD CONTS PRESERV (Y/N) | ARD FILTERED RY (L) LAB (F) FIELD | .oN bodjeM | 0128 | | | 2012 m 2018 | |
| 1.30.38 0810 | w 7285w1002 | | 125351-01 | 1102 | · | 7 2 | | • | 7 | 14- | | | |
| 130.780510 | 1285 WOLD | | 1285mo. | reo 1 | | 2 | | | <u>.</u> | 2h- | | | |
| 0200 | | Ľ. | Fows 827 | 7701 | | 2 | | | $\langle \langle \rangle$ | -47 21- | | | |
| 0260 | | | 728 Side3 | 7701 | | 5 | | 7 | | Hh- | | 7 | |
| 0260 | S 728-SE1002 | | 728-5603 | 7D/1 | | 2 | | 7 | 7 | 27 7 | | 2 | |
| 0200 | S 728-560302 | | 728 - 5603 | N175 | AB Gas | 5 1 | / | 7 | Z | -M- | J Z I |) | |
| | | ,,, | | | | | | | \sum | Fut | MSH | at the | 4 |
| | • | | | | | | | | RIG 1 | B | | The second secon | <u>B</u> |
| | | | | | | | | | | 6/8/2 | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | $\overline{\ }$ | | | | | | | | |
| Relinquished by: (Signature) | Revell | Date/Time: 7-30-2 | -28 / 6 Received by: | by: | A | a voran | Date/Time: | 101 | 0 | Cooler | Cooler Terrperature: | :eun; | |
| Remarks: X M5 | ms/msD (~ | oder | '≠S ` ia | 2072 | Scer Te | it i | PIJENA | 222 | LT STA | STANDARD PRESERVATION (Y): | RESERVAT | (Y) NOL | |
| ~ | | | | Send | Send Results to: | | | | E | | ر ح | | |
| (| AIRBILL CO. | | Q | Christ 1201 | tine Hetting Peachtree ta, Georgia | Christine Hettinger c/o METCALF & ED 1201 Peachtree St., N.E., 400 Colony S Atlanta, Georgia 30361 | Christine Hettinger c/o METCALF & EDDY, INC. 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101 ∆stanta, Georgia 30361 | VC. , Suite 11(| 200 5 | | S A (| | |
| | TRACKING NO: | NO: | - | |) 881-8010 | , FAX (404) (| 372-3161 | | | STORED/SI | | N MADINI C | z |

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SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

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

| | 4 2022 2444 |
|--|--|
| METCALF & EDDY Representative | FAX # (404) 872-3161 |
| SUBCONTRACTOR ASI | PROJECT # |
| SAMPLE CUSTODIAN Name Shakoer | TODAY'S DATE |
| DATE/TIME SAMPLES RECEIVED _730 98 16:15 | |
| AIRBILL NUMBER | NO. OF COOLERS |
| COOLER OPENED: DATETBO F18_ TIME | |
| 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 | Although the second seco |
| TYPE OF COLLANT USED | |
| | Y MELTED/FROZEN |
| COOLER NUMBER # TEMP INSI # # RECORD TEMPERATURE BLANK (1) (2) CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING (INTACT?) IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFF | DE COOLER |
| LIST SAMPLE ID'S IN EACH SHIPMENT: <u>728 - 50002</u> 728 - 500302, 728 - 5030 728 - 520302 | 728-50002, 2,728-521002, |

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.

| | | | | Field | Trip | Equipment | |
|------------|-------------|---------------|----------------|-------------------|---------------|---------------|--|
| <u>SDG</u> | <u>Date</u> | <u>Matrix</u> | <u>Samples</u> | <u>Duplicates</u> | <u>Blanks</u> | <u>Blanks</u> | |
| 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:

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

Where V_s 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 = Concentration of spike found Concentration of spike added

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 $^{\circ}$ C to 7 $^{\circ}$ C. These temperatures are within the acceptable limits of the required preservation requirement of 4 $^{\circ}$ C plus or minus 2 $^{\circ}$ 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: Date:

hunter1\chem\reports\728-98.ltm



| FIELD LOG GROUNDWATE | | | | HEET | Metcall & Eddy |
|--------------------------------------|----------------------|-------------------|--|--|---------------------|
| SAMPLED BY: | 5. Rowell D | . Wilderm | en | WELL ID: | 728-MW01 |
| PROJECT NAME:_ | HAAF 13T | atr | Sampling | LOCATION: | B.728 |
| Date sampled: 7 | | | · · · · · · · · · · · · · · · · · · · | | upon arrival? (Y) N |
| 1. Casing Diameter (| d) inche | s + 12 = <u>(</u> | 0.1 <u>7</u> ft | 1. Standing water (ga | 11.) = <u>1.7</u> |
| 2. Depth of water fro | om T.O.C | 5.2. | ft | 2. X <u>3</u> | well volumes |
| 3. Depth of well from | T.O.C | 3.20 | ft | 3. =5. / | gallons to purge |
| 4. Feet of standing w | vater (h) | 0.00 | ft | 4. Purging Method _ | Waterra Pump |
| CALCULATION: Standing water volum | | |) | | |
| | = 3.14 | [(<u>0.17</u> | _ft.) ² + 4] (_ <i>10.0</i> | // ⁰⁰ _ft.) x 7.48 gal / ft. ³ = | <u>1.7</u> gal |
| | | | pН | Conductivity | Temperature, (F) |
| 1.Well volume = | . / | | 4.5 | 207 | 27.7 |
| 2.Well volume = | 3.4 | gal | 4.5 | 205 | |
| 3.Well volume = | 5.1 | _gal | 4.4 | 205 | 25.4 |
| 4.Well volume = | | _gal | | · | |
| 5.Well volume = | | _gal | | · · · · · · · · · · · · · · · · · · · | |
| Ground water sampl | e | | | | |
| Sampling method - | D:sposable | Teflon | Bailer | Field preservation | |
| Sample Description | i | | | | |
| Odor: | | | | | |
| Color: | | | | | |
| Appearance | • | | | | |
| Weather Conditions | | | | | |
| Air Monitoring Equi | pment used: <u>0</u> | VA | | ···· | |
| Reading: | Breathing zon | e: _Ø <i>рр</i> | n | | ······ |
| | In Well: | <u>2 ррп</u> | n | •••••••••••••••••••••••••••••••••••••• | |
| COMMENTS: | | | | | 1 |
| | ···· | | | | |
| | | | | | : |
| | | | | | |



| FIELD LOG GROUNDWATE | BOOK SA | | | HEET | Molcali & Eddy |
|--------------------------------------|-------------|-----------------------|--|----------------------------------|------------------|
| SAMPLED BY: | 6. Lowell | D. Vilde | a prom | WELL ID: | 728- MW04 |
| PROJECT NAME: HAAF 1st atr Sampling | | | LOCATION: | B.728 | |
| Date sampled: 7 | | | , | | pon amival? 🔿 N |
| 1. Casing Diameter (| d) inc | hes + 12 = _ | 0.17 ft | 1. Standing water (gal | .) = <u>1,3</u> |
| 2. Depth of water fro | om T.O.C | 5.29 | ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from | T.O.C. | 12.90 | ft | 3. = <u>3. 9</u> | gallons to purge |
| 4. Feet of standing w | vater (h) | 7.51 | ft | 4. Purging Method <u>U</u> | Vaterra Pump |
| CALCULATION: Standing water volum | ne = π [| (d) ² +4](| h) | | · |
| | = 3. | 14[(_0.17 | _ft.) ² + 4] (<u>7</u> ,5 | 5 (_ft.) x 7.48 gal / ft.3 = _1 | <u>.</u>] gal |
| | | | pН | 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 samp | ie | | | | |
| Sampling method - | _D:sposable | e Teflon | Bailer | _ Field preservation | ,, |
| Sample Description | I | | | · | |
| Odor: | | | | | |
| Color: | | | | | |
| Appearance | : | | | | |
| Weather Conditions | : | | | | |
| | | | | | |
| Reading: | Breathing z | one: | Om | | |
| | | | | | |
| COMMENTS: | | | | | |
| | | | | | |
| | | | | | |
| <u> </u> | | | · · · · · · · · · · · · · · · · · · · | | |

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| GROUNDWATER MONITORING WELL WORK SH | EET |
|--|---|
| SAMPLED BY: 6. have D. Wilderman | WELL ID: 728 - mw1 |
| PROJECT NAME: HAAF 1st atr Sampling | LOCATION: B.728 |
| Date sampled: 7-29-98 Time start End | Well secured upon arrival? (Y) N |
| 1. Casing Diameter (d) inches + 12 =ft | 1. Standing water (gal.) = <u>l · /</u> |
| 2. Depth of water from T.O.C. 6. 12 ft | 2. X <u> </u> |
| 3. Depth of well from T.O.C. 12.30 ft | 3. = 3.3 gallons to purge |
| 4. Feet of standing water (h) 6.18 ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| $= 3.14 \left[\left(\underline{0.17}_{\text{ft.}} \right)^2 \div 4 \right] \left(\underline{\ell}_{e.18} \right)^2$ | 3ft.) x 7.48 gal / ft. ³ = gal |
| pH | Conductivity Temperature, (F) |
| 1.Well volume = <u>1.1</u> gal. <u>3.6</u> | |
| 2.Well volume = 2.2 gal. $\frac{1}{2}$ gal. $\frac{1}{2}$ | 74 26.3 |
| 3.Well volume = <u>3.3</u> gal. <u>5.1</u> | 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: <u>OVA</u> | |
| Reading: Breathing zone: <u>Ppm</u> | <u></u> |
| In Well: ppm | |
| COMMENTS: * 2 pt. recalibration | |
| 1 | · · · · · · · · · · · · · · · · · · · |
| | |
| | |

FIELD LOG BOOK SAMPLING DATA:



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| SAMPLED BY: 6- Powell D Wildonman | WELL ID: | 728-mw60 |
|--|---------------------------------|---------------------------------------|
| PROJECT NAME: HAAF 1st atr Sampling | LOCATION: | B.728 |
| Date sampled: 7/20/98 Time startEnd | _ Well secured up | on arrival? 🕜 N |
| 1. Casing Diameter (d) | 1. Standing water (gal.) | =/ |
| 2. Depth of water from T.O.C. 6.70 ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from T.O.C. 13.00 ft | 3. = | gallons to purge |
| 4. Feet of standing water (h) 6.30 ft | 4. Purging Method <u>U</u> | laterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | | |
| $= 3.14 [(0.17 \text{ ft.})^2 + 4] (6.30$ | _ft.) x 7.48 gal / ft.3 = _ / . | _/ gal |
| рН | Conductivity | Temperature, (F) |
| 1.Well volume = (.) gal3.7 | 357 | |
| 2.Well volume = gal | 364 | 24.9 |
| 3.Well volume = <u>3.3</u> gal. <u>4.0</u> | 382 | 24.0 |
| 4.Well volume = gal. | | |
| 5.Well volume = gal. | | |
| Ground water sample | | · · · · · · · · · · · · · · · · · · · |
| Sampling method - D: sposable Teflon Bailer | Field preservation | |
| Sample Description | | |
| Odor: | | |
| Color: | | |
| Appearance: | | |
| Weather Conditions: | | |
| Air Monitoring Equipment used: <u>OVA</u> | | |
| Reading: Breathing zone: <u><i>Ppm</i></u> | <u></u> | |
| In Well: <u>>1000 ppm</u> | ····· | |
| COMMENTS: | | . · · |
| | · | · |
| | | |
| | | |



| | BOOK SAMPL | ING DATA: WELL WORK S | HEET | Metcall & Eddy |
|--------------------------------------|---|---|-----------------------|--------------------|
| | c a | Vildeman | | 728 - mw 61 |
| PROJECT NAME:_ | HAAF 1st C | tr Sampling | _ LOCATION: | B.728 |
| | | startEnd | | upon arrival? 🚫 N |
| 1. Casing Diameter (| d) inches + 1 | 2= <u>0./7</u> ft | 1. Standing water (ga | al.) =1, / |
| 2. Depth of water fro | om T.O.C. 6.6 | <u>, /</u> ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from | 1 T.O.C13.0 | c ft | 3. = <u>うう</u> | _ gallons to purge |
| 4. Feet of standing w | vater (h) 6.39 | ft | 4. Purging Method _ | Waterra Pump |
| CALCULATION: Standing water volum | ne = $\pi[(d)^2$ | +4](h) | | · |
| | = 3.14 [(| <u>0.17</u> ft.) ² + 4] (<u>6</u> . | <u> </u> | gal |
| | | pH | Conductivity | Temperature, (F) |
| 1.Well volume = | <u> </u> | 2.7 | 81 | 25.4 |
| 2.Well volume = | 2.2 gal | | 119 | 25.0 |
| 3.Well volume = | <u> </u> | . 3.6 | 125 | 24.6 |
| 4.Well volume = | | | <u></u> | |
| 5.Well volume = | gai | · | | <u> </u> |
| Ground water sample | le | | | |
| Sampling method - | D:sposable Te | flom Bailer | _ Field preservation | |
| Sample Description | | | | |
| Odor: | | | | <u></u> |
| Color: | | | | <u> </u> |
| Appearance | • | | | - |
| Weather Conditions | :: | | | |
| Air Monitoring Equip | prment used: OVA | | | |
| Reading: | Breathing zone: _ | Ø ppm | | |
| | | | | |
| COMMENTS: | | · · · | | |
| | | | | (|
| | | | · | |
| | | | | |



| SAMPLED BY: <u>6. Rowell D Wildeman</u> | WELL ID: 728 - mw 63 |
|---|---|
| PROJECT NAME: HAAF 1st atr Sampling | LOCATION: B.728 |
| Date sampled: 7/29/98 Time start End | Well secured upon arrival? (Y) N |
| 1. Casing Diameter (d) | 1. Standing water (gal.) = 1.2 |
| 2. Depth of water from T.O.C. 6.79 ft | 2. X <u>3</u> well volumes |
| 3. Depth of well from T.O.C. 14.00 ft | 3. = <u>3. 4</u> gallons to purge |
| 4. Feet of standing water (h) 7.21 ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | • |
| $= 3.14 \left[\left(\underline{0.17} \text{ ft.} \right)^2 + 4 \right] \left(\underline{7.11} \right)^2$ | _ft.) x 7.48 gal / ft. ³ = <u>1.</u> gal |
| нq | Conductivity Temperature, (F) |
| 1.Well volume = $\frac{1.2}{2}$ gal. 3.5 | 152 25.1 |
| 2.Well volume = $2.9'$ gal. $\neq 5.9'$ | 187 24.5 |
| 3.Well volume = $\frac{9.4}{5.5}$ gal. 5.5 | 194 24.3 |
| 4.Well volume = gal | |
| 5.Well volume = gal. | <u> </u> |
| Ground water sample | · |
| Sampling method - Disposable Teflon Bailer | Field preservation |
| Sample Description | |
| Odor: | · · · |
| Color: | |
| Appearance: | |
| Weather Conditions: | |
| Air Monitoring Equipment used: <u>OVA</u> | · |
| Reading: Breathing zone: <u><i>Ppm</i></u> | |
| In Well: <u>ppm</u> COMMENTS: <u>2 pt. recal: bration</u> | ····· |
| COMMENTS: _2 pt. recal: bration | |
| | |
| | |
| | |



| SAMPLED BY: 6. Rowell D Wildowam | WELL ID: 728 - MW64 |
|---|--|
| PROJECT NAME: HAAF 1st atr 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 | 1. Standing water (gal.) = <u> </u> |
| 2. Depth of water from T.O.C. <u>5.39</u> ft | 2. X well volumes |
| 3. Depth of well from T.O.C. 13.00 ft | 3. = $3 \cdot 5$ gallons to purge |
| 4. Feet of standing water (h)ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | · · · · · · · · · · · · · · · · · · · |
| $= 3.14 \left[\left(\underline{-0.17}_{\text{ft.}}\right)^2 + 4 \right] \left(\underline{-7.67}_{\text{ft.}}\right)^2$ | _ft.) x 7.48 gal / ft.3 = <u>1-3</u> gal |
| pH . | Conductivity Temperature, (F) |
| 1.Well volume = <u>1.3</u> gal. <u>3.4</u> | 62 26 |
| 2.Well volume = 2.6 gal. 3.4 | <u> </u> |
| 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: <u>OVA</u> | |
| Reading: Breathing zone: <u><i>Kppm</i></u> | |
| In Well: <u>2. ppm</u> | |
| COMMENTS: | |
| | |
| | |
| | |



| SAMPLED BY: 6-Rowell P. Wildermon | WELL ID: 728 - MW 45 |
|--|--|
| PROJECT NAME: HAAF 1st atr Sampling | LOCATION: B.728 |
| Date sampled: 7/20/98 Time start End | _ Well secured upon arrival? (Y) N |
| 1. Casing Diameter (d) inches + 12 =0.17_tt | 1. Standing water (gal.) =) , / |
| 2. Depth of water from T.O.C. 6.73 ft | 2. X <u> </u> |
| 3. Depth of well from T.O.C. 13.00 ft | 3. = 3.3 gallons to purge |
| 4. Feet of standing water (h) 6.27 ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| $= 3.14 [(0.17 \text{ tt.})^2 + 4] (6.27$ | _ft.) x 7.48 gal / ft. ³ = <u> </u> |
| pH | Conductivity Temperature, (F) |
| 1.Well volume = gal | 187 25.1 |
| 2.Well volume = 2.7 gal. <u>5.9</u> | |
| 3.Well volume = <u>3.3</u> gal. <u>5.8</u> | 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: <u>OVA</u> | |
| Reading: Breathing zone: <u><i>Ppm</i></u> | · · · · · · · · · · · · · · · · · · · |
| In Well: | |
| COMMENTS: | |
| · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
| | |
| | · |

SITE RANKING FORM

| Facility Name: Former Building 728 | Ranked by: D. Humphris | | | |
|--|--|--|--|--|
| County: <u>Chatham</u> Facility ID#: <u>9025035 ar</u> | nd 9025049 Date Ranked: 9/30/98 | | | |
| CONTAMINATION | | | | |
| SOIL CONTAMINATION | | | | |
| A. Total PAHs - B. Maximum Concentration found on the site (Assume <0.660 mg/kg if only | Total Benzene - Maximum Concentration found on the site | | | |
| gasoline was stored on site) | □ ≤ 0.005 mg/kg = 0 | | | |
| □ ≤ 0.660 mg/kg = 0 | □ > 0.00505 mg/kg = 1 | | | |
| $\Box > 0.66 - 1 \text{ mg/kg} = 10$ | ■ >.05- 1 mg/kg* = 10 | | | |
| □ > 1 - 10 mg/kg = 25 | □ > 1-10 mg/kg = 25 | | | |
| ■ > 10 mg/kg = 50 | □ > 10 - 50 mg/kg = 40 | | | |
| · · | □ > 50 mg/kg = 50 | | | |
| C. Depth to Groundwater (bls = below land surface) | | | | |
| □ > 50' bls = 1 | | | | |
| \Box > 25'-50' bis = 2 | | | | |
| □ > 10'-25' bis = 5 | | | | |
| ■ ≤10 bis = 10 | | | | |
| Fill in the blanks: (A. <u>50</u>) + (B. <u>10</u>) = (<u>60</u>) x (C. <u>10</u>) = (D. <u>600</u>) | | | | |
| GROUNDWATER CONTAMINATION | · · · · · · · · · · · · · · · · · · · | | | |
| E. Free Product (Nonaqueous-phase liquid F. hydrocarbons; See guidelines for definition of "sheen"). | Dissolved Benzene - Maximum Concentration at the site (One well must be located at the source of the release) | | | |
| $\square \text{ No free product } = 0$ | 1 < 5 uo/L = 0 | | | |
| ■ Sheen - 1/8"** = 250 | | | | |
| $\Box > 1/8" - 6" = 500$ | $\Box > 5 - 100 \text{ ug/L} = 5$ | | | |
| □ > 6" - 1 ft = 1,000 | $\square > 100-1,000 \text{ ug/L} = 50$ | | | |
| For every additional inch, add another | ■ > 1,000-10,000 ug/L = 100 □ > 10,000 ug/L = 250 | | | |
| 100 points = <u>1,000 +</u> | □ > 10,000 ug/L = 250 | | | |
| Fill in the blanks: (E. 250) + (F. 100 |) = (G. <u>350</u>) | | | |
| The second a determine in the contraction in the | tions | | | |

*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.

| Н. | Public Water Supply | | Ι. | Nor | n-Public Water Supp | bly |
|-----------|---|--|---------|------------|--|---|
| | Impacted ≤ 500' > 500' - 1/4 mi > 1/4 mi - 1 mi > 1/4 mi - 2 mi > 2 mi lower susceptibility area > 1 mi | = 2000 = 500 = 25 = 10 = 2 = 0 s only: = 0 ptibility area, do not use to the second secon | | ■. Iowe | > 500' mi - 1/4 mi > 1/4 mi - 1/2 mi > 1/2 mi er susceptibility area > 1/4 | = 2 = 0 |
| J. | Distance from nearest (boundary to downgradie UTILITY TRENCHES 8 may be omitted from ra elevation is more than $\frac{1}{2}$ table. Impacted $\leq 500'$ > 500' - 1,000' > 1,000' | ent Surface Waters OR • VAULTS (a utility trench nking if its invert | К. | and | tance from any Free I crawl spaces Impacted ≤ 500' > 500' - 1,000' > 1,000' or no free product | Product to basements = 500 = 50 = 5 = 0 |
| Fill in t | • | H. <u>0)</u> + (I. <u>0</u>) + (J. <u>50</u> (G. <u>350</u> |) x (L. | 5(| _) = L. <u>500</u> 00_) = M. <u>175,00</u> 00_) = N. <u>175,60</u> | |
| | SUSCEPTIBILITY ARE If site is located in a 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

(N.<u>175,600</u>) x (P.<u>1</u>) = (L.<u>175,600</u> Fill in the blanks:) + (Q<u>.</u>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

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- 4 Site Ranking Results

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. <u>Potentiometric Data</u>:

Tabulate all data and illustrate <u>last 2</u> 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. <u>Analytical Data</u>:

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 $\mu g/L$ (**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 $(0.0311 \ \mu g/L$ 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 μ g/L; below the EPA Region 3 tap water standard of 0.092 μ g/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 $3.1 \mu g/L$ at SWE01 (upgradient) and at 0.68 $\mu g/L$ 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 <u>N/A</u>

(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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| | NAT |
|---|--|
| 01 UAL LOCATION "SOUTHEAST (UPGRADIEN SYMBOL IN DROP INLET | POWER POLE MH - MANHOLE DI - DROP INLET NA - NOT MEASURED 15.5 POTENTIOMETRIC CONTOUR MEASUREMENTS TAKEN 7/29/98 30 0 60 120FT SCALE: 1"= 60' |
| FIGURE 2a | U.S. ARMY ENGINEER DISTRICT, SAVANNAH CORPS OF ENGINEERS SAVANNAH, GEORGIA |
| POTE | MER BUILDING 728 AREA NTIOMETRIC SURFACE MAP T QUARTERLY SAMPLING AIRFIELD SAVANNAH, GEORGIA |
| METCALF & ED | DY |



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FIGURE 4

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

| | | | | BENZENE RE | ESULTS (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



p:\hazwaste\hunt_ltm\728-qtr2.xls

| | Chatha | F H | ROUNDWATEF ormer Building unter Army Air Icility ID Nos. 9 | 728 | 25049 | |
|----------|-------------------------------|------------------------|---|--------------------------------------|----------------------------------|--------------------------------|
| 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 | |
| САР-В | | | | | | |
| 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_lim\wellsum.xls)

TABLE 2 : GROUNDWATER ANALYTICAL RESULTS

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|-------------|---------|-------------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | TYPE | (l/gn) | (I/gn) | (l/gn) | (l/gn) | (I/gn) | (l/ɓn) |
| MW01 | 11/2/98 | Primary | | n | n | n | Ω | 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 | þ | ∍ | D | ⊃ | С | 0.21 |
| SMW01(B710) | 11/2/98 | Primary | n | ŋ | n | n | U | 0.041 |
| ARARS | | SDWI | 71.28 | 200,000 | 28,718 | B | L | u. |

U = Not Detected.

(-) = No IWQS listed.

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|--------|---------|-----------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | TYPE | (I/6n) | (I/gn) | (l/gu) | (I/6n) | (I/ɓn) | (l/gn) |
| 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 | 0 |
| SW03 | 11/5/98 | Primary | 0.68 | 5 | C | C | 0.68 | 5 |
| ARARS | | IWQS | 71.28 | 200,000 | 28,718 | , | | B |

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

•

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TABLE 4 : SEDIMENT ANALYTICAL RESULTS

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

| (mg/kg) (mg/kg) (mg/kg) (mg/kg) U U U U 1 15 18 700 | | | RESULT | Benzene | Toluene | l Ethylhenzene | Xvlanec | TOTAL RTEX | TOTAL PAH |
|---|-------|---------|-----------|---------|----------|----------------|---------|------------|-----------|
| 11/5/98 Primary U < | SITE | DATE | TYPE | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| 11/5/98 Duplicate U U U U S 11/5/98 Duplicate U 115 U 18 | SE03 | 11/5/98 | Primary | D | _ | _ | n | n | 4.930 |
| 115 1 18 | SE10 | 11/5/98 | Duplicate | D | D | D | D | D | 8.260 |
| | ARARS | | STL STL | 0.017 | 115 | 18 | 700 | 6 | |

U = Not Detected.

(-) = No STL listed (Table B, <500 ft to surface water).</p>

(c:\-usace\hunter1\chem\reports\728q2t4.xls)

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.

| | | | | Field | Trip | Equipment |
|------------|-------------|---------------|----------------|-------------------|---------------|---------------|
| <u>SDG</u> | <u>Date</u> | <u>Matrix</u> | <u>Samples</u> | <u>Duplicates</u> | <u>Blanks</u> | <u>Blanks</u> |
| 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 | Γ 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:

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

Where V_s 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 = Concentration of spike found Concentration of spike added

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 $^{\circ}$ C to 7 $^{\circ}$ C. These temperatures are within the acceptable limits of the required preservation requirement of 4 $^{\circ}$ C plus or minus 2 $^{\circ}$ 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

<u>Polynuclear Aromatic Hydrocarbons</u> - 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.

<u>Gasoline Range Organics</u> - 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.

12/22/98 Reviewed by: Date:

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

728-MW6103 728MW61 < 0.0311 < 0.0311 < 0.097 < 0.0311 < 0.0311 <0.157 < 0.0311 11/03/98 < 0.123 < 0.031 0.24 < 0.214 Primary 0.12 < 0.107 <5.0 <5.0 1100 <5.0 < 5.0 0.33 0.71 67 290 930 <u>0</u> 728-MW8003 Duplicate 1 728MW60 < 0.0311 < 0.157 < 0.0311 < 0.0311 < 0.097 < 0.0311 < 0.0311 11/03/98 < 0.123 1.5 0.055 < 0.214 0.9 < 0.164 < 0.031 < 0.107 <25 3000 3600 < 25 ₹25 < 25 280 720 0.1 728-MW6003 728MW60 < 0.0311 < 0.302 <0.097 < 0.0311 < 0.0311 < 0.0311 <0.0311 11/03/98 < 0.157 0.05 < 0.164 < 0.031 < 0.123 < 0.214 0.79 < 0.107 Primary <13 < 270 2900 3500 ₩ V v 13 3 0.86 v 13 710 728-MW1103 728MW11 < 0,0311 < 0.0311 < 0.0311 <0.157 < 0.0311 < 0.0311 < 0.0311 < 0.123 < 0.103 11/03/98 < 0.097 < 0.031 < 0.302 <0.50 < 0.092 < 0.214 < 0.107 85 --- = Not analyzed < 0.50 Primary < 0.50 < 0.50 0.83 2 <u>о</u> 62 728-MW0603 < = Not detected at indicated reporting limit 728MW06 < 0.0311 < 0.0311 11/03/98 < 0.157 <0.302 0.26 < 0.031 < 0.214 0.13 Primary 0.34 6.3 0.72 с 5 6.8 \$0.5 <0.5 < 0.5 <0.5 **4**.0 0. 4 7.5 7.5 2.5 2 4. 23 I 728-MW0103 728MW01 11/03/98 <0.097 < 0.103 < 0.0311 < 0.0311 < 0.0311 < 0.302 < 0.157 < 0.031 < 0.123 < 0.092 < 0.164 < 0.214 < 0.107 0.13 0.05 Primary <0.5 0.5 0.1 V 9.0× < 0.5 <0.5 < 0.5 < 0.5 <0.5 ×0.5 0.09 RESULT TYPE SAMPLE ID Values represent total concentrations unless noted DATE SITE (Units in ug/L) ndeno(1,2,3-c,d)pyrene Dibenz(a,h)anthracene 1,2-Dichlorobenzene Benzo(b)fluoranthene Benzo(k)fluoranthene 1, 3-Dichlorobenzene 1,4-Dichlorobenzene Benzo(ghi)perylene Benzo(a)anthracene Anthracene Benzo(a)pyrene Acenaphthene Acenaphthylene CONSTITUENT Fluoranthene Chlorobenzene Xylene (total) Phenanthrene Ethylbenzene Naphthalene Chrysene Toluene Fluorene Benzene Pyrene

EPA METHODS:8021B, 8310.

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

728-WW6503 <0.123 728MW65 <0.157 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 <0.103 11/03/98 < 0.302 < 0.097 < 0.164 < 0.092 < 0.214 <=Not detected at indicated reporting limit ----=Not analyzed</p> <0.5 < 0.107 Primary < 0.21 o V ₹0.5 ₹0.5 <0.5 <0.5 < <0.5 < < 0.5 728-MW6403 728MW64 <0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.123 11/03/98 < 0.0311 < 0.103 < 0.097 <0.157 < 0.302 < 0.092 < 0.031 < 0.214 < 0.107 <2.5 Primary А2.5 Д 1500 510 < 2.5 < 2.5 270 170 4.8 728-MW6303 728MW63 < 0.0311 <0.123 < 0.0311 < 0.0311 < 0.0311 11/03/98 < 0.0311 < 0.157 < 0.0311 < 0.103 < 0.097 < 0.031 < 0.214 < 0.107 Primary <2.5 0.69 570 <2.5 < 2.5 <2.5 100 0.23 910 120 6.9 I RESULT TYPE SAMPLE ID DATE Values represent total concentrations unless noted SITE (Units in ug/L) ndeno(1,2,3-c,d)pyrene Dibenz(a,h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzo(a)anthracene Benzo(ghi)perylene Benzo(a)pyrene CONSTITUENT Acenaphthylene Acenaphthene Chlorobenzene Xylene (total) Phenanthrene Anthracene Ethylbenzene Ioluene Chrysene Fluoranthene Naphthalene Fluorene Benzene Pyrene

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R = RESULT IS REJECTED.

RESULT IS ESTIMATED.

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LONG TERM MONITORING - FORMER BUILDING 728 PRIMARY RESULTS FOR GROUNDWATER

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R = RESULT IS REJECTED. J = RESULT IS ESTIMATED. Values represent total concentrations unless noted <=Not detected at indicated reporting limit ---=Not analyzed A0.5 <0.097 710-SMW0112 710SWW01 < 0.0311 < 0, 123 < 0.0311 < 0.0311 11/03/98 < 0.302 < 0.0311 < 0.0311 <0.103 < 0.157 < 0.092 < 0.214 Primary < 0.164 < 0.107 <0.5 < 0.27 ₹0.5 0.041 < 0.5 < 0.5 < 0.5 < 0.5 I RESULT TYPE SAMPLE ID DATE SITE (Units in ug/L) Indeno(1,2,3-c,d)pyrene Dibenz(a,h)anthracene 1,2-Dichlorobenzene Benzo(b)fluoranthene 1,4-Dichlorobenzene Benzo(k)fluoranthene 1,3-Dichlorobenzene Benzo(ghi)perylene Fluoranthene Benzo(a)anthracene Benzo(a)pyrene Acenaphthene Acenaphthylene CONSTITUENT Xylene (total) Chlorobenzene Anthracene Phenanthrene Ethylbenzene Naphthalene Chrysene Toluene Fluorene Benzene Pyrene

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

| | SITE | 728SWE01 | 728SWE01 | 728SWE03 |
|--|-------------|---|-------------|----------------|
| CONSTITUENT (Units in ug/L) | 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 | <05 <05 |
| Ethylbenzene | | 1.4 | 1.2 | <0.5 |
| Xylene (total) | | 3.0 | 2.7 | <10 |
| Chlorobenzene | | <0.5 | < 0.5 | <0.5 |
| 1,2-Dichlorobenzene | | <0.5 | <0.5 | <05 |
| 1,3-Dichlorobenzene | | <0.5 | <0.5 | <0.5 |
| 1,4-Dichlorobenzene | | <0.5 | <0.5 | <05 |
| | | L.L.L.L.L.L.L.L.L.L.L.L.L.L.L.L.L.L.L. | | |
| 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 |
| Benzolalpyrene | | <0.0311 | <0.0311 | <0.0311 |
| Benzo(b)fluoranthene | | < 0.0311 | < 0.0311 | <0.0311 |
| Benzo(ghi)peryiene | | <0.157 | <0157 | ≪0.157 |
| Benzo(k)fiuoranthene | | < 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 |
| hdeno[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 |
| (| | | ٩ | |

Page: 1A of 1A

EPA METHC 021B, 8310.

R = RESULT IS REJECTED.

RESULT IS ESTIMATED.

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

R = RESULT IS REJECTED J = RESULT IS ESTIMATED Values represent total concentrations unless noted <= Not detected at indicated reporting limit --- = Not analyzed 728-SE1003 728SWE03 Duplicate 1 < 0.0040 < 0.0040 < 0.0040 < 0.0040 <0.23 86/30/11 < 0.23 0.40 < 0.23 < 0.23 1.6 < 0.23 < 0.23 < 0.23 0.88 0.41 0.64 0.60 1.5 J 0.00 0.73 1.5 17 ł ł ł 728-SE0303 728SWE03 < 0.0040 < 0.0040 < 0.0040 < 0.0040 <0.23 11/05/98 Primary < 0.23 <0.23 < 0.23 < 0.23 < 0.23 0.83 0.39 < 0.23 0.74 J 0.28 0.36 0.28 J 0.51 0.00 0.42 0.40 ł 1.0 17 For RCL 8000AJASI RESULT TYPE SAMPLE ID DEPTH (ft) DATE SITE EPA METHODS:8020,8310,DR0,GR0. (Units in mg/kg) Indeno(1,2,3-c,d)pyrene Dibenzo(a,h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)anthracene Benzo(a)pyrene Acenaphthylene Acenaphthene Fluoranthene CONSTITUENT Xylene (total) Phenanthrene Anthracene Ethyl benzene Naphthalene Toluene Chrysene Fluorene Benzene Pyrene GRO DRO

of 1A Page: 1A

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| FIELD LOG BOOK SAMPLING DA | | HEET | Melcali & Eddy |
|--|--------------|--------------------------|------------------|
| SAMPLED BY: Humphins / Howard | | | 728-MW/ |
| PROJECT NAME: HAAF 2 atr 50 | | | B.728 |
| Date sampled: 11/3/48 Time start 09 | ŧ. | | oon arrival? 🕅 N |
| 1. Casing Diameter (d) 2 inches + 12 = 0.1 | <u>7_</u> ft | 1. Standing water (gal. |) = 1.7 |
| 2. Depth of water from T.O.C. 3.60 | ft | 2. X 3 | well volumes |
| 3. Depth of well from T.O.C. /3.2 | ft | 3. = | |
| 4. Feet of standing water (h) | | 4. Purging Method _L | Vaterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | | | . , |
| = 3.14 [(<u>0.17</u> ft.) | 2 + 4] (| ft.) x 7.48 gal / ft.3 = | gal |
| | pН | | Temperature, (F) |
| | 5.50 | | |
| 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 - D: sposable Teflon J | Bailer | _ Field preservation | [.] |
| Sample Description | | | |
| Odor:None | | | · |
| Color: <u>L+-Br</u> | | · · · · · | |
| Appearance: <u>furbid</u> | | | · |
| Weather Conditions:PC., brceze, war | | | |
| Air Monitoring Equipment used: <u>OVA</u> | | | |
| Reading: Breathing zone: <u>Ppm</u> | | | |
| In Well: <u>3 ppm</u> | | | |
| COMMENTS: | | | |
| | | | (|
| | | | |
| | | · · · · | |



| FIELD LOG BOOK SAMPLING DATA: GROUNDWATER MONITORING WELL WORK S | |
|---|--|
| SAMPLED BY: Humphiss / Howand | WELL ID: 728 - MW6 |
| PROJECT NAME: HAAF 2 Qtv Sampling | LOCATION: B.728 |
| Date sampled: 11/3/98 Time start 0910 End 0 | Well secured upon arrival? (Y) N |
| 1. Casing Diameter (d) 2 inches + 12 = 0.17 ft | 1. Standing water (gal.) = /, 2 |
| 2. Depth of water from T.O.C. 5.41 ft | 2. X <u> </u> |
| 3. Depth of well from T.O.C. <u>12.9</u> ft | 3. = <u>3, 7</u> gallons to purge |
| 4. Feet of standing water (h)ft | 4. Purging Method Waterra Pum |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| = 3.14 [(<u>0.17</u> tt.) ² + 4] (| ft.) x 7.48 gal / ft. ³ = gal |
| pН | Conductivity Temperature, (|
| 1.Well volume = /, 2 gal 6, 2.3 | 679 29.2 |
| 2.Well volume = <u>2.4</u> gal. <u>6.2</u> | - |
| 3.Well volume = <u>3, 7</u> gal. <u>6, 20</u> | 698 23.9 |
| 4.Well volume = gal. | |
| 5.Well volume = gal. | |
| Ground water sample | |
| Sampling method - Disposable Teflon Bailer | Field preservation |
| Sample Description | |
| Odor: <u>Sulphur</u> , petroleum Color: <u>H</u> Br. | · · · · · · · · · · · · · · · · · · · |
| Color: 4 Br. | |
| Appearance:tur bid | |
| Weather Conditions: PC, sl. brceze, Warm | |
| Air Monitoring Equipment used: <u>OVA</u> | |
| Reading: Breathing zone: <i>ppm</i> | · · · · · · · · · · · · · · · · · · · |
| In Well: | |
| COMMENTS: | |
| | |
| | |
| | |



| FIELD LOG BOOK SAMPLING GROUNDWATER MONITORING WEI | DATA: LL WORK SH | EET | Molcall & Eddy |
|--|----------------------------|---------------------------------------|-------------------|
| SAMPLED BY: Humphris / Howard | 2 | WELL ID: | 728-MW11 |
| PROJECT NAME: <u>HAAF 2 atr</u> | Sampling | | B.728 |
| Date sampled: 11/3/18 Time start | 6810 End 682 | ⊘ Well secured L | ipon arrival? 🕅 N |
| 1. Casing Diameter (d) 2 inches + 12 = | <u>0.17</u> tt | 1. Standing water (ga | l.) = |
| 2. Depth of water from T.O.C. 6.55 | ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from T.O.C. 12.3 | ft | 3.= 3.0 | gallons to purge |
| 4. Feet of standing water (h) | ft | 4. Purging Method | Waterra Pump |
| CALCULATION: Standing water volume = $\pi[(d)^2 + 4](h)$ | 1) | | · • |
| = 3.14 [(_0.17 | _ft.) ² + 4] (| ft.) x 7.48 gal / ft. ³ = | gal |
| | pН | Conductivity | Temperature, (F) |
| 1.Well volume = / gal | 5.5 | 79,4 | 23,3 C |
| 2.Well volume = 2.0° gal. | 5,39 | 59.6 | 23.3 |
| 3.Well volume =3 , 0gal | 5,25 | 57.9 | 23.7 |
| 4.Well volume = gal | | <u> </u> | . <u></u> |
| 5.Well volume = gal | | | |
| Ground water sample | | | |
| Sampling method - D: sposable Teflon | Bailer | Field preservation | |
| Sample Description | | | |
| Odor: <u>Sulphur/potroleum</u> | · . · · · · | | |
| Color: 4/dK Br | | · · · · · · · · · · · · · · · · · · · | |
| Appearance: <u>furbid</u> | | | |
| Appearance: <u>furbid</u> Weather Conditions: <u>PC</u> , warm, sl. 1 | breeze | | |
| Air Monitoring Equipment used: <u>OVA</u> | | | |
| Reading: Breathing zone: | | | |
| in Well: <u>Dppr</u> | | | |
| COMMENTS: | | | |
| | | | |



| FIELD LOG E | BOOK SAMPL | | SHEET | Melcail & Eddy |
|---------------------------------------|------------------------|--|--------------------------------------|--------------------|
| SAMPLED BY: | Humphris | s / Howard | WELL ID: | 728-MW60 |
| PROJECT NAME: | HAAF 20 | 2tr Sampling | | B.728 |
| | 1 1 | e start 0851 End 0 | | upon arrival? 🕅 N |
| 1. Casing Diameter (d |) <u></u> inches + | 12 = <u>0./7</u> tt | 1. Standing water (ga | ll.) = |
| 2. Depth of water from | m T.O.C | 7.16 ft | 2. X <u>3</u> | well volumes |
| 3. Depth of well from | т.о.с | <u>/3.0</u> ft | 3. = <u> </u> | _ gallons to purge |
| 4. Feet of standing wa | ater (h) | ft | 4. Purging Method _ | Waterra Pun |
| CALCULATION: Standing water volume | e = π[(d) ² | ²+4](h) | | |
| | = 3.14 [(| <u>_0.17_</u> ft.) ² + 4] (| ft.) x 7.48 gai / ft. ³ = | gal |
| | ~ | pН | Conductivity | Temperature, (|
| 1.Well volume = | | al. <u>5.85</u> | 236 | Z3.7 C |
| 2.Well volume = | g | al. <u>5.89</u> | 244 | Z 3.8 |
| 3.Well volume = | <u>3,9</u> | al. <u>5.87</u> | 245 | 23.8 |
| 4.Well volume = | | al | | |
| 5.Well volume = | ga | al | | <u> </u> |
| Ground water sample | 9 | · · · | <u> </u> | |
| Sampling method | Disposable T | Eflon Bailer | Field preservation - | |
| Sample Description Odor: | Sulphur / per | troleum | • | · · · · |
| Color: | furbid | | | |
| Appearance: | P(| | | |
| | | | | |
| | | | | |
| Reading: | | | | |
| COMMENTS: | | NUppm | | , |
| | | | | |
| - | | | | |
| | | | , | |



| FIELD | LOG BO | OOK SAMPI | ING D | ATA: | |
|--------|--------|------------|--------|------|-------|
| GROUNI | OWATER | MONITORING | G WELL | WORK | SHEET |
| | | , , | 1.1 1 | | |

| SAMPLED BY: Humphins / Howard | WELL ID: 728-MW61 |
|--|--|
| PROJECT NAME: HAAF 2 atr Sampling | |
| Date sampled: $1/3/48$ Time start 0905 End 09 | Well secured upon arrival? (Y) N |
| 1. Casing Diameter (d) 2 inches + 12 = <u>0.17</u> ft | 1. Standing water (gal.) = <u>/. 3</u> |
| 2. Depth of water from T.O.C. 7.05 tt | 2. X <u>3</u> well volumes |
| 3. Depth of well from T.O.C. <u>13.D</u> ft | 3. = 4.0 gallons to purge |
| 4. Feet of standing water (h)ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| = 3.14 [(0.17 tt.)2 + 4](| ft.) x 7.48 gal / ft. ³ = gal |
| рH | Conductivity Temperature, (F) |
| 1.Well volume = 1.3 gal. 4.83 | |
| 2.Well volume =, $b_{gal.} = 5.45$ | 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: <u>Sulphur / petroleum</u> | |
| Color: | |
| Appearance: | · · · · · · · · · · · · · · · · · · · |
| Weather Conditions: PC, Sl. breeze, Warm | · · · · · · · · · · · · · · · · · · · |
| Air Monitoring Equipment used: <u>OVA</u> | |
| Reading: Breathing zone: <u>Øppm</u> | |
| In Well: <u>5.0 ppm</u> | |
| COMMENTS: | · · · · · · · · · · · · · · · · · · · |
| | |
| | |
| | |



| FIELD LOG GROUNDWATE | BOOK SAMPLING | DATA: | НЕЕТ | Motcall & Eddy |
|--|-------------------------------|--|---------------------------------------|---------------------------------------|
| - | Humphris / Howard | | | 728-MW63 |
| | HAAF 2 Qtr | | LOCATION: | B.728 |
| | 1/3/98 Time start | • / | | pon amival? 🔿 N |
| 1. Casing Diameter | (d) inches + 12 = | <u>0.17_ft</u> | 1. Standing water (gal | .) =/ , 3 |
| 2. Depth of water from | om T.O.C7-23 | <u>5 </u> | 2. X <u> </u> | well volumes |
| 3. Depth of well from | n T.O.C | <u> </u> | 3. = 3. 9 | gallons to purge |
| 4. Feet of standing v | water (h) | ft | 4. Purging Method _{ | Naterra Pury |
| CALCULATION: Standing water volur | ne = $\pi[(d)^2 + 4]($ | h) | | |
| | = 3.14 [(<u>0.17</u> | ft.) ² + 4] (| ft.) x 7.48 gal / ft. ³ = | gai |
| 1 Woll volume - | /. 5gal. | рн 5-47 | • | Temperature, (F |
| | | 5.55 | | •• |
| 3.Well volume = | | 5.64 | | 23.6 |
| | gal. | | | |
| - | gal. | | · · · · · · · · · · · · · · · · · · · | |
| Ground water samp | le | | · · · · · · · · · · · · · · · · · · · | |
| Sampling method - | Disposable Teflon | . Bailer | _ Field preservation | |
| Sample Description | n | | | |
| Odor: | sulphur / petrolec dkbr/gn | im | | |
| Color: | dk br/gn | | | · · · · · · · · · · · · · · · · · · · |
| Appearance | :turbid | | | |
| | s: <u>PC</u> , sl. breeze, | | | |
| | pment used: <u>OVA</u> | | | |
| | Breathing zone: | | | |
| | | | | |
| COMMENTS: | | | | |
| · | ····· | | | |
| | | | | |
| τια του του πολλαγικό το του του του του του του του του του | | | | · · · |

| MXE |
|----------------|
| Melcall & Eddy |
| - |

)

| GROUNDWATE | R MONITO | | L WORK S | HEET | | Metcall & Eddy |
|--------------------------------------|-----------------|--------------------------|---------------------------------------|---------------------------------------|------------------------------|---------------------------------------|
| SAMPLED BY: | Humphois | Howard | | • | WELL ID: | 728-MW64 (|
| PROJECT NAME: | | | | _ | | B.728 |
| Date sampled: | | | | | Well secured | upon arrival? 🚫 N |
| 1. Casing Diameter (| (d) in | ches + 12 = | <u>17_</u> ft | 1. Star | iding water (g | al.) =/. Z |
| 2. Depth of water from | om T.O.C | 5.87 | ft | 2. X _ | 3 | well volumes |
| 3. Depth of well from | n T.O.C. | 13.0 | ft | 3. = | 3.6 | gallons to purge |
| 4. Feet of standing w | water (h) | | ft | 4. Purç | ging Method | Waterra Pump |
| CALCULATION: Standing water volum | ne = π | [(d) ² +4](h) | | | | · · · · · |
| | = 3 | .14 [(<u>0.17</u> f | t.) ² + 4] (| ft.) x 7.4 | 8 gal / ft. ³ = _ | gal |
| 1.Well volume = | | | pH | Cor | aductivity | Temperature, (F) |
| 2.Well volume = | , | - | | | | |
| 3.Well volume = | 3.6 | gal | | | | |
| 4.Well volume = | | gal | | | <u></u> | (|
| 5.Well volume = | | gal | | | | <u></u> |
| Ground water samp | | | | · | | · · · · · · · · · · · · · · · · · · · |
| Sampling method - | D:sposabl | le lefton | Bailer | _ Field p | reservation - | |
| Color: | 1 | | · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · | | |
| Weather Conditions | | | ar m | | | |
| Air Monitoring Equi | | | | | | |
| | | | | | | |
| | | | | | | |
| COMMENTS: | | | | | | |
| | | | | | | (|
| | | | | | | ,(|
| | | | | | | |

| FIELD LOG E | | | i DATA: Ell work shi | EET | Metcali & Eddy |
|--|------------|----------------------|--------------------------------|--------------------------|---------------------------------------|
| SAMPLED BY: | Hump | hvis / He | oward | WELL ID: | 728-MW65 |
| PROJECT NAME: | HAAF | 2 atr | Sampling | LOCATION:_ | B.728 |
| Date sampled: | | | q | Well secured u | pon arrival? (Y) N |
| 1. Casing Diameter (d |) inch | es + 12 = _ | <u>0.17</u> tt | 1. Standing water (gal | .) =/, 3 |
| 2. Depth of water from | n T.O.C | 7,2 | 2ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from | T.O.C | /3,(| <u> </u> | 3. = 4.0 | gallons to purge |
| 4. Feet of standing wa | ater (h) | | ft | 4. Purging Method _L | Vaterra Pum |
| CALCULATION: Standing water volume | θ = π[| (d) ² +4] | (h) | | |
| | = 3.1 | 4[(<u>0.17</u> | ft.) ² + 4] (| ft.) x 7.48 gal / ft.3 = | gal |
| 1.Well volume = | 1.5 | a al | pH NA Spilled | Conductivity | Temperature, (F) $\mathcal{N}A$ |
| 2.Well volume = | 3,0 | gal. | 5,90 | 161.4 | |
| | | | 5,90 | 152.1 | 23.2 |
| 3.Well volume = | | | | | |
| 4.Well volume = 5.Well volume = | | | | · · · · | |
| | | | | | |
| Ground water sample Sampling method | | | Bailer | Field preservation | |
| Sample Description | | | | | |
| Odor: | None | | | | · · · · · · · · · · · · · · · · · · · |
| Color: | Lt.Br. | | | | |
| Appearance: | furbid | | | | · · · · · · · · · · · · · · · · · · · |
| Weather Conditions: | PC/ove | reast, u | jarm | | |
| Air Monitoring Equip | ment used: | OVA | | | |
| | | | | | |
| | | | | | |
| COMMENTS: | | | | | |
| <u> </u> | | | | | · |
| = | | · · · · | | | |

FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA



| Date $1/5/98$ Location <u>B.728</u> SWE01 | ····· |
|--|---------------------------------------|
| Samplers Used $\leq s = b_0 \omega l$ | |
| | |
| Drawing of sampling location (including location description as well as the pressure of debris surface she debris surface sheens, recent excavations, vegetation, etc.) | |
| PC, mild, sl. breeze | |
| | 080 |
| Time of sample collection 1400 | |
| OVA Readings NA | |
| Depth of water (for sediment sampling) 4^{\prime} , ± 10 g pm | |
| Decontamination (page number references) <u>Work Plan p A 10-2</u> Spoons or spatulas Trowel Hand corer Hand auger Bowls Split spoons | · · · · · · · · · · · · · · · · · · · |
| Photograph frame numbers NA | |
| Signature of field team personnel making data entry) D. Humphois | |

FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA



| Date $11/5/98$ Location $B.728$ SWE03 | |
|---|---|
| Samplers Used 55 bowl 55 Spoon, encore | |
| | |
| Drawing of sampling location (including location description as well as the pressure of debris debris surface sheens, recent excavations, vegetation, etc.) 5we03 1 1 1 1 1 1 1 1 | SURFACE WATER SAMPLE Collected also. 99 µmbos/cm 19.1 °C 6.39 pH |
| PC, mild-warm | |
| | |
| Soil/sediment sampling parameters: 8240 8010 8020 8100 8270 GRO DRO Description of sample $\frac{dk/bf}{B_{L}}$ fire samel, organics Time of sample collection $\frac{1}{4.55}$ OVA Readings $\frac{NA}{Depth}$ of water (for sediment sampling) $\frac{5''}{dep}$ | |
| Decontamination (page number references) Uorkplan p.A. 10-2 | |
| Spoons or spatulas | <u> </u> |
| Trowel | · · · · · · · · · · · · · · · · · · · |
| Hand corer | |
| Hand auger | |
| Bowls | |
| Split spoons | |
| Photograph frame numbers | |
| Signature of field team personnel making data entry) D. Humphis | |

SITE RANKING FORM

| | ity Name: <u>Former Building 728</u> ity: <u>Chatham</u> Facility ID#: <u>9025035 a</u> | Ranked by: <u>D. Humphris</u> nd 9025049 Date Ranked: <u>12/4/98</u> |
|-------|---|---|
| OIL | CONTAMINATION | |
| A. | Total PAHs - B. Maximum Concentration found on the site (Assume <0.660 mg/kg if only gasoline was stored on site) $\Box \leq 0.660 \text{ mg/kg} = 0$ | Total Benzene - Maximum Concentration found on the site $\Box \leq 0.005 \text{ mg/kg} = 0$ $\Box > 0.00505 \text{ mg/kg} = 1$ |
| | □ > 0.66 - 1 mg/kg ≈ 10 | ■ >.05- 1 mg/kg* = 10 |
| | □ > 1 - 10 mg/kg = 25 | □ > 1-10 mg/kg = 25 |
| | □ > 1 - 10 mg/kg = 25 ■ > 10 mg/kg = 50 | □ > 10 - 50 mg/kg = 40 |
| | | □ > 50 mg/kg = 50 |
| | Depth to Groundwater (bls = below land surface) | |
| | □ > 50' bis = 1 | |
| | □ > 25'-50' bls = 2 | |
| | □ > 10'-25' bls = 5 | |
| | ■ ≤10 bls = 10 | |
| ill i | n the blanks: (A. <u>50</u>) + (B. <u>10</u>) = (<u>60</u> |) x (C. <u>10</u>) = (D. <u>_600</u>) |
| | | |
| JKU | UNDWATER CONTAMINATION Free Product (Nonaqueous-phase liquid F. | Dissolved Benzene - |
| | hydrocarbons; See guidelines for definition of "sheen"). | Maximum Concentration at the site |
| E | hydrocarbons; See guidelines for definition of "sheen"). No free product = 0 | Maximum Concentration at the site (One well must be located at the source of the release) |
| E | hydrocarbons; See guidelines for definition of "sheen"). No free product = 0 Sheen - 1/8" = 250 | Maximum Concentration at the site (One well must be located at the source of the release) □ ≤ 5 ug/L = 0 |
| E | hydrocarbons; See guidelines for definition of "sheen"). No free product = 0 Sheen - $1/8^{"}$ = 250 > $1/8^{"}$ - $6^{"}$ = 500 | Maximum Concentration at the site (One well must be located at the source of the release) $\Box \leq 5 \text{ ug/L} = 0$ $\Box \geq 5 - 100 \text{ ug/L} = 5$ |
| [| hydrocarbons; See guidelines for definition of "sheen").No free product=0Sheen - $1/8$ "=250> $1/8$ " - 6">=500>>6" - 1 ft=1,000 | Maximum Concentration at the site (One well must be located at the source of the release) $\Box \leq 5 \text{ ug/L}$ = 0 $\Box > 5 - 100 \text{ ug/L}$ = 5 $\Box > 100 - 1,000 \text{ ug/L}$ = 50 |
| 5 | hydrocarbons; See guidelines for definition of "sheen").No free product= 0Sheen - $1/8^{"}$ = 250> $1/8^{"}$ - $6^{"}$ = 500> 6" - 1 ft= 1,000 | Maximum Concentration at the site (One well must be located at the source of the release) $\Box \leq 5 \text{ ug/L} = 0$ $\Box > 5 - 100 \text{ ug/L} = 5$ |

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

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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.

| Н. | Public Water Supply | I. | Non-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 r lower susceptibility areas only = 0 If site is in lower susceptibility area, do not use | | $ \begin{array}{ c c c c c } & & & & & & & & & & & & & & & & & & &$ |
| 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. $\square \text{ Impacted} = 500$ $\blacksquare \le 500' = 50$ $\square > 500' - 1,000' = 5$ $\square > 1,000' = 1$ | К. | Distance from any Free Product to basements and crawl spaces $ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$ |
| Fill in 1 | the blanks: =(H. <u>0</u>) + (I. <u>0</u>) + (J. <u>5(</u> | | |
| | · | | <u> 500)</u> = M. <u> 55,000</u> |
| - | (M. <u>55,000</u> |) + (D | . <u> 600)</u> = N. <u> 55,600</u> |
| <u>P.</u> | SUSCEPTIBILITY AREA MULTIPLIER | _ | • |
| | If site is located in a low Groundwater Pollution | Suscept | ibility Area - 0.5 |
| Q. | All other sites = 1 EXPLOSION HAZARD | | |
| | Have any explosion vapors, possibly originating fro structure (e.g., utility trenches, basements, vaults, | | |
| | □ Yes = 200,000 | | |
| | ■ No ≈ 0 | | |
| Fill in t | he blanks: (N. <u>55,600</u>) x (P. <u>1</u> = <u>55,600</u> ENVIRONMENTAL SENSI | <u></u> | |

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

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APPENDICES

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| 2 | Tables |
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|---|--------|

- 3 Laboratory Analytical Results
- 4 Site Ranking Results

MONITORING ONLY REPORT

Submittal Date:April 1999Monitoring Report Number: 3rd Quarterly SamplingFor Period Covering:December 1998toFebruary 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: | Prepared by Consultant/Contractor: |
|--|---------------------------------------|
| Name: Mr. Tom Fry | Name: David Wilderman |
| Company:HQs, 3d ID (Mech) & Fort Stewart | Company: Metcalf & Eddy, Inc. |
| Address: 1557 Frank Cochran Drive | Address: 1201 Peachtree St. N.E. |
| · | 400 Colony Square, Suite 1101 |
| City: Fort Stewart State: GA | City: <u>Atlanta</u> State: <u>GA</u> |
| Zip Code: 31314-4928 | Zip Code: 30361 |
| Telephone: 912-767-1078 | 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: DAVIT WILD FRMAN |
|------------------------|
| Signature: Jult |
| Date: 3.30.99 |



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.

5/98

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. <u>Potentiometric Data</u>:

Tabulate all data and illustrate <u>last 2</u> 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. <u>Analytical Data</u>:

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)

MONITOR TEM

5/98

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 μ g/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 ($0.0311 \mu g/L$ 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 μ g/L at SWE01 (upgradient) and at 2.1 μ g/L at SWE03 (downgradient). **Figures 3a** and **3b** show the two surface water sampling locations and results. The IWQS of 0.0311 μ g/L was exceeded in the duplicate sample collected at SWE03 for chrysene. The chrysene concentration in the duplicate sample was 0.07 μ g/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

5/98

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 <u>N/A</u>

(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.

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FIGURE 4

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

| | | | BENZENE RESUL | .TS (ug/L) | |
|--------|-------|----------|---------------|------------|----------|
| WELL # | 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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| | | ormer Buildin H | lunter Army Air | uarterly Sampling | | |
|----------|---------------------|--------------------|-----------------------|-----------------------|-----------------------|------------------|
| | Screen | Water | TOC | Water Level | Surface | Free Prod. |
| Location | Interval ft, bgs | Depth, TOC | Elevation, ft, msl | Elevation, ft, msl | Elevation, ft, msl | Thickness ft. |
| CAP-A | 11, 093 | | | | 10,110 | 10 |
| 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 | |
| | | | | | | |
| САР-В | | | | | | |
| 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 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

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|--------------|---------|-------------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | TYPE | (I/6n) | (l/ɓn) | (l/6n) | (l/6n) | (l/6n) | (l/bn) |
| TOWM | 2/17/99 | Primary | n | n l | n | n | n | η |
| MW06 | 2/17/99 | Primary | 9.3 | 3.9 | 14 | ∍ | 27.2 | 11.5 |
| MW11 | 2/17/99 | Primary | 56 | 5 | 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 | Þ | 130 | 540 | 950 | 1.04 |
| MW63 | 2/17/99 | Primary | 066 | 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 | D | D | ⊃ | D | Π | 0 |
| SMW01 (B710) | 2/17/99 | Primary | n | D | D | D | 5 | Ĵ |
| ARARS | | | 71.28 | 200,000 | 28,718 | | | • |

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

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|--------|---------|-----------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | TYPE | (I/ɓn) | (I/Bn) | (I/Bn) | (I/gn) | (l/6n) | (l/bn) |
| SW01 | 2/17/99 | Primary | 2.5 | 1.4 | <u> </u> | 4.7 | 8.6 | L 67.0 |
| SW03 | 2/17/99 | Primary | 2.1 | 0.59 | D | 6.4 | 7.59 | 0.40 |
| SW1004 | 2/17/99 | Duplicate | 1.9 | D |) | | 1.9 | 0.15 |
| ARARS | | SOWI | 71.28 | 200,000 | 28,718 | , | | |

U = Not Detected.

(-) = No IWOS 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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|----------|---------|-----------|----------|---------|--------------|---------|------------|-----------|
| SITE | DATE | TYPE | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| SE03 | 2/17/99 | Primary | D | 0.004 J | n | n | 0.004 J | 5.94 J |
| SE1004 2 | 2/17/99 | Duplicate | n | 0.007 J | D | 5 | 0.007 J | L 07.7 |
| 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.

| | | | | Field | Trip | Equipment | |
|------------|----------|---------------|----------------|-------------------|---------------|---------------|--|
| <u>SDG</u> | Date | <u>Matrix</u> | <u>Samples</u> | Duplicates | <u>Blanks</u> | <u>Blanks</u> | |
| 104778 | 02/17/99 | WATER | 13 | 2 | 1 | 1 | |
| | | SEDIMENT | C 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:

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

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 = Concentration of spike found Concentration of spike added

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 °C to 6 °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

Groundwater and Surface water:

<u>PAHs</u> - 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:

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

<u>VOCs</u> - 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:

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Page: 1A of 1B

HUNTER ARMY AIRFIELD LONG TERM MONITORING - BUILDING 728 PRIMARY RESULTS

728-MW6304 <0.0311 J 728MW63 <0.302 J < 0.0311 < 0.0311 < 0.0311 02/17/99 <0.157 < 0.0311 < 0.103 < 0.123 <0.0311 < 0.107 <0'02 < 0.092 < 0.214 < 0.031 <5.0 Primary <5.0 < 5.0 < 5.0 **4**0 120 130 066 7.3 28-MW6104 <0.0311 J <0.0311 < 0.302 J 728MW61 < 0.0311 < 0.0311 < 0.0311 02/17/99 < 0, 157 < 0.097 <0,0311 < 0.031 < 0.123 < 0.164 < 0.214 < 0.107 Primary <5.0 0.60 <5.0 <5.0 < 5.0 < 5.0 540 0.44 280 130 728-MW6004 <0.0311 <0.0311 J 728MW60 < 0.302 J < 0.0311 < 0.0311 < 0.0311 02/17/99 <0.157 < 0.097 < 0.0311 < 0.123 <0.214 < 0.103 < 0.031 < 0.107 < 0.164 Primary 2700 м У 3300 <13 < 13
 13 230 1.6 630 728-MW1104 <0.0311 J < 0.302 J 728MW11 < 0.0311 < 0.097 < 0.0311 02/17/99 < 0.157 < 0.0311 < 0.0311 < 0.123 < 0.0311 < 0.103 < 0.031 < 0.107 < 0.092 < 0.214 < = Not detected at indicated reporting limit --- = Not analyzed Primary < 0 S <0.5 <0.5 <0.5 62 0 7 9.8 1. 56 728-MW0604 <0.0311 J <0.302 J < 0.0311 728MW06 < 0.097 <0.0311 < 0.157 02/17/99 < 0.0311 < 0.0311 < 0.0311 < 0.123 < 0.031 Primary < 0.214 < 0.107 2,4 ₹0.5 0.1 V <0.5 <0.5 0 <0.5 ත. ෆ 1.8 7.3 9.3 4 728-MW0104 <0.0311 J 728MW01 < 0.302 J < 0:0311 < 0:0311 < 0.0311 < 0.157 < 0.0311 02/17/99 <0.103 < 0.164 <0.097 < 0.031 < 0.0311 < 0.123 < 0.092 < 0.214 < 0.107 Primary <0.5 <0.5 0.1 V <0.5
 <0.5
 < 0.5 <0.5 < 0.5 RESULT TYPE SAMPLE ID Values represent total concentrations unless noted DATE SITE (Units in ug/l) Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene 1,2-Dichlorobenzene 1,3-Dichlorobenzene (,4-Dichlorobenzene Benzo(a)anthracene Benzo(ghi)perylene Benzo(a)pyrene Acenaphthylene Acenaphthene Chlorobenzene CONSTITUENT Anthracene Fluoranthene Xylene (total) Phenanthrene Ethylbenzene Toluene Chrysene Naphthalene Fluorene Benzene Pyrene

For RCL 8000ABASI

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

Page: 1B of 1B

HUNTER ARMY AIRFIELD LONG TERM MONITORING - BUILDING 728 PRIMARY RESULTS

| 8 | SITE | 728MW64 | 728MW64 | 728MW65 | 728SWE01 | 728SWE03 | 728SWE03 |
|--|-------------|--------------------------------|----------------------------|----------------|------------|------------|-------------|
| CONSTITUENT (Units in ug/l) SA | SAMPLE ID | 728-MW6404 | 728-MW8004 | 728-MW6504 | 728-SW0104 | 728-SW0304 | 728-SW1004 |
| Ĝ | DATE | 02/17/99 | 66/17/20 | 02/17/99 | 02/17/99 | 02/17/99 | 02/17/99 |
| RI | RESULT TYPE | Primary | Duplicate 1 | Primary | Primary | Primary | Duplicate 1 |
| Benzene | | 290 | 310 | <0.5 | 2.5 | 2.1 | 1.9 |
| Totuene | | 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 |
| Chiorobenzene | | <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 م | <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 |
| | | - | | 1 | **** | | |
| 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 | V | =Not detected at indicated rej | icated reporting limit= No | = Not analyzed | | | |
| | | | | | | | (|

For RCL 800

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RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD PRIMARY RESULTS BUILDING 728

<=Not detected at indicated reporting limit ---=Not analyzed</p> <0.30 728-SE1004 728SWE03 **Duplicate 1** 0.0066 J < 0.0035 < 0.0035 < 0.0035 02/17/99 < 0.30 < 0:30 0.81 J < 0.35 0.53 J < 0.30 < 0.30 < 0.30 0.54 J 0.91 J 0.91 J < 0.30 1.3 J < 0.30 1.3 J 0.00 1.4 J 1 70 J 728-SE0304 728SWE03 <0.0029 0.0040 J < 0.0029 < 0.0029 <0.24 02/17/99 1.1 J < 0.24 < 0.24 Primary 0.25 J < 0.24 0.81 J 0.27 J 0.48 J 0.48 J 0.55 J < 0.24 < 0.24 < 0.24 C 06:0 0.34 1.1 J 1 0:00 72 J RESULT TYPE SAMPLE ID DEPTH (ft) Values represent total concentrations unless noted DATE SITE (Units in mg/kg) Indeno(1,2,3-cd)pyrene Gasoline Range Organics Dibenzo(a,h)anthracene **Diesel Range Organics** Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)pyrene Benzo(a)anthracene Phenanthrene Acenaphthene Acenaphthylene Xylene (total) CONSTITUENT Fluoranthene Ethyl benzene Anthracene Naphthalene Chrysene Toluene Fluorene Benzene Pyrene

For RCL 8000AJASI

Page: 1A of 1A

| | - | ··· · · | | | | | | | i X | m | ۲. ۲. | | سال | ~ | 5 | ž | <u> </u> | 3 | $\underline{\mathbb{C}}$ | 88 2.2 2.2 | | | | |
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| X | | <u>a</u> ~{ | 0 | | - \ | 4 | vo orin a | | | | - | 12 | 1 | | | | | | 1 | li li | | | z | |
| 6 | PARAMETERS/METHODS | • • • | 12. | 00 | a pr | 70 | BURNOR | | | | T | 7 | Т | | | | | | | : Ivrine | STANDABD DBESEBVATION (Y) | | IN ICE Y/N | 3 |
| * | /MET | - e I | <u> </u> | < Ö | | - | | | | | | | | | | | | | | erue: | | 2 | N C | |
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| | RAME | <u>т</u> п (3) | | <u> </u> | шv | | | | | | | | | | | | | | | - | | HCI/VOC, | HINO3/METALS H ₂ SQ/ OTHER | |
| | | ТШК | a - c |) – a | | | | | | | | N-SV | | | | | | | | Cooler Tene RANC | | E P | HNQ/ H_SQ/ OTHER | 5 |
| | ANALYTICAL | E w - • | ע ר א | <u>5</u> | £ | CVAA GFAA | | | | | | 9_1 | | | | | | | | F | STA STA | Ē | <u> ୧୭୦</u> | |
| | ANA A | *> 0. | ە ك ، | 4: | ±_ | 2 | 0-200 | | ц | Ŕ | | 5 2 | | 3 | | | | | | ÷ | | | 5 | |
| 78 | 2 | >000 | s | | Ż | | 1000- | ŝŊ | М | Μ | | 5 | | Μ | \mathcal{M} | η | Μ | η | M | J. | | | lite 11 | |
| 47 | | | I | | | A | .oN borteM | | 1 | | | | | | | | I | | | 19 | | | INC. | |
| 455+04-738 | | | | | | 222 | FILTERED (L) LAB (F)FIELD | - . | 1 | | 1 | | 1 |) | ſ |) | 1 | | | 99 | -14 | | EDDY, V Squa | 5 |
| A V | | | | | | 2 M | | | | | | | | | | | | | | Date/Time: 2/)&/ | 1 to | • | LF& Colony 72-31 | 0-3 |
| 1 | | | | | | 0/2 | STANRDARD PRESERV. (YN)* | \times | \succ | \succ | 2 | S | N | \succ | \succ | \geq | \succ | ㅅ | > | | | - | 4ETCA 400 | |
| | S | <u></u> | | | | 2m | NO. OF CONTS | | | 10 | | | 2 | ۍر ا | \sim | | | | | · · · · · | 7 | | C/0 N.E. 10361 | |
| | RECORD | | | | | N, | | ŝ | 5 | ۇىر | 6 | | 2 | , - , - , - , - , - , - , - , - , - , - | \sim | \sim | M | $\frac{1}{2}$ | ~ | | | s to: | ttinger tree Si rgia 3 | |
| | RE(| | | | | B | DEPTH (FT) | $\left \right\rangle$ | | \backslash | \backslash | $\left \right\rangle$ | \backslash | \backslash | | $\sum_{i=1}^{n}$ | \backslash | \backslash | \backslash | | 1 por | Send Results to: | Christine Hettinger c/o METCALF & EDDY, INC. 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101 Atlanta, Georgia 30361 Atlanta, Stat.8010 FAX (404) 872-3161 | |
| | י ר | | | | |) SIGNATURE: | S E | 11 | | | 01 | Ξ | | 10 | = | | 1 | _ | 0 | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | Seal | endF | Christ 1201 Atlant | - |
| | ТОРУ | | Ň. | VENT: | TYPE: | SIGN | RES CODE | BTII | ppol | PDII | PP01 | 511 | PDII | 10dd | BRII | PPOI | ppol | PPOI | ppol | an a | 1 \ . 1 | N. | | _ |
| | ST | | ORDER | EEVE | AM TY | ER(S) | | | | | | • | | | | | | | | Received by: | el re- | | ב | H |
| | CG | | TASK ORDER NO | SAMPLE E | PROGRAM | SAMPLER(| | З | 3 | 33 | 03 | 03 | 63 | _ | 1 | | 0 | | m | | to regel | | 29 | 7 |
| | ۱ لل | | F | Di | Ē | ווט | STE D | E O. | о П С | Ш | <u>З</u> | <u>з</u> | <i>у</i> П | L 三 | W | NO M | WG | N C. | N G | 00 | · · | | X X X | |
| | Ō | | | | | | | 7285WE03 | 7285WE03 | 7285WE03 | 7285WE03 | 7285WE03 | 7285WE03 | 7285WE01 | 728MWD | 728 MW01 | 728MW60 | 728 MW 61 | 728MW 63 | 1900 | 2/18/29 | | Fed Ex | 2 |
| | Ż | | | | | 1 | | 725 | 12 | 72. | 72. | L'L | 728 | 128 | 72 | R | 72.5 | 728 | 72 | 0 | 6 | | 2 cl | - |
| | CHAIN - OF - CUS | | | | | GROWE | | | | | | | | | | Ŧ | | ····· | - | Date/Time: 2//7/0 | The second secon | | AIRBILL CO. Fed EX TRACKING NO: #1116292396 | 0 |
| | ວ | | 5 | 3 | | Ro | 0 | 728-7803 | 728-5W030H | 728-5W 1004 | 728-5E030H | 728-5E0304 MSD | 728-5E1004 | 728-5W DIOH | 10 | HOIOMW-87L | 728-MW6004 | 728-MW6104 | 728-MW6304 | N B | M | • | o' z | |
| l | | | LTM | 110 | | Q | FIELD SAMPLE ID | 18 | SWC | SW) | E0 | 5030 | SEL | Q M | 586 | <u>х</u> З | MW(| 1 W 6 | NWG | Y | $\left[\right]$ | | AIRBILL CO. TRACKING NO | |
| | | | -4 | 1 | 1 1 | 8 | SAN | 8 | - 2 | - 20 | r) 1 100 | 8-SI | <u>ئ</u> | 8 | 728-E801 | 8-1 | 8-1 | 2-2 | 8-1 | ř | | | AIRB | |
| | | | ter F | μL | X | 201 | | 72 | ñ | | | | | 12 | 72 | 72 | 72 | ñ | 72 | £ | inero | | | |
| | | | Hunter | 021974-4103 | A V | Howard | HATRIX (SW) | З | 3 | 3 | ž, | ž, | УХ Ж | M | M | M | M | 3 | 3 | David Hura | 173 total containers | | | |
| - | | | 1 | 0 | | | AF | | | | | | | | | † | | | | , P | 14 | | ź | |
| | | E | AME: | <u>بر</u> | ΥıD: | NAM | TINE MILITARY | 3915 | 0130 | 0930 | 0930 | 0530 | 0930 | 1045 | 1130 | 1135 | 1155 | 1200 | IHOS | | 124 | | . (| |
| | | Metcalf & Eddy | PROJECT NAME: | PROJECT NO: | LABORATORY ID: | sampler(s) name: D | | 21199 0915 | 2 | | - | |) | | _ | | 7 | | _ | Relinquished by (Signature) | 1 1 | · · | | |
| ſ | | Metc | PROJE | PROJE | ABOF | SAMPL | DATE | 217 | | | | | | | | | | <u> </u> | \geq | Relingt (Signat | Remarks: | | | |
| - | | | .—1 | | | 1 | | | | | | | | | | | | | | | | | | |

1/210E = 3 2 T 1 Å みよ 20 MAN STORED/SHIPPED IN ICE NN /METHODS STANDARD PRESERVATION (Y): 0 × 0 I ١ TEMUS BLONK = 2°6. ત Cooler Temperature: $\vdash a \perp \smallsetminus \Box \simeq O$ HNO3/METALS H2SQ4/ OTHER പറത S N HCI/VOC, ANALYTICAL PARAME a u v F U — **О Ш О** 5 **т** ш ж в – О – О ж м € VA €200 GFAA ក្លិ 0-M0 ゕ> 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101 19pt 3 η η (m)M \mathbf{M} M 9 > 0 0 0 m pod 1 822701#ISA Method No. Christine Hettinger c/o METCALF & EDDY, INC. FILTERED (L) LAB (F) FIELD 94 ۱ Atlanta, Georgia 30361 (404) 881-8010, FAX (404) 872-3161 Date/Time: STANRDARD I 2 (N/A): >≻ > >>SAMPLER(S) SIGNATURE: David Havan \geq > \succ CHAIN - OF - CUSTOD - - RECORD NO. OF CONTS. \mathcal{M} 3 З ŝ \mathcal{O} 3 2 \mathbb{M} Send Results to: 12420 DEPTH (FT.) 199 lodd PPOI RES CODE lodd PPOI Ppol P I P 1 add 3 C TASK ORDER NO. PROGRAM TYPE: SAMPLE EVENT: Received by: 728MMSO64 728MW65 HOMWELL 728MW06 728MW06 ZOMWOIL /ダム 728 MW II IOM WOIL FedEx Site D 006 Š Y 17/99 Ø, Date/Time: Rowr 728-MWD604 MSD 728-MW6404 HOOSMW-SZL 728-MW0604 728-MW6504 728-MW1104 21974-4103 710-MW0213 Ellomm-OIL TRACKING NO: Ċ HunterLTM AIRBILL CO. \mathcal{O} FIELD SAMPLE ID D HOWARd すく NATRIX (SW) کے 3 3 \geq 3 3 3 2 3 0 1505 1525 TIME 1525 750 SAMPLER(S) NAME: 1450 1200 415 2/17/99/14 15 Metcalf & Eddy PROJECT NAME: LABORATORY ID: Relinquished by PROJECT NO: (Signature) Remarks: DATE

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| | | | | | | AST 401 #ICA | E,201 | 7.8 ANALYTICAL PARAMETERS/METHODS | AL PARA | METERS | /METH | SOO |
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| Metral & Edda | | - - | • | | | | > 0 (| Σ Ш H | ΣW | <u>е С</u> | ⊢ ດ .: | o مر |
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| PROJECT NAME: /7 u | Munter LIM | TASK ORDER NO | NO. | | | | | אר אר | - U | - u | 2 œ | |
| PROJECT NO: 0219 | 021974-4103 | SAMPLE EVENT: | :ĽN | | | | | G | - 0 | - 0 | 0 | |
| LABORATORY ID: | AST | PROGRAM TYPE: | PE: | | | | | He He | шv | ш <i>о</i> | | |
| SAMPLER(S) NAME: \mathcal{D} H | DHoward GROWE! |] SAMPLER(S) | | Hanil Han | 2/Jan | Renel | | CVAA GFAA | 4 4 | | | |
| DATE MILTARY WAT | MATRIX FIELD (SW) SAMPLEID | SITE | RES DI (| DEPTH NO. DF (FT.) CONTS. | E STANRDARD PRESERY. | FILTERED (L) LAB (F) FIELD | Vethod No. | 10m-0 | | _ | | |
| 2/17/99/1415 W | 128-MW6404 | 728MW64 | lodd | 7 | 2 | 1 | | И | | | | 14/- |
| 1415 W | HOOSMW-STL (| 728 MWGH | - II Qd | 7 | N | 1 | | 2 | | | | 5 |
| W 65H | | 728 MW65 | PP01 | 5 | N | ļ | | 7 | | | | 9/2 |
| 1525 W | 728-MW1104 | IIMW82L | - lodd | 4 | 2 | l | | d | | | | 17 |
| 1525 W | 728-MW0604 | 90MW & ZL | lodd | R | R |) | | Ц | | | | $\frac{\infty}{1}$ |
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| Relinquished by: | Pate/Time: | ime: Received by: | ρλ; | | Date/Time: | lime: | | | Coole | Cooler Temperature: | rature: | |
| Hend | Howard 2/17 | 199/1920 / 16h. | Plue D' | | 2 | 13/95 . | 5/160 | | 2aisn/ | 209=20 | - TEWOB | TENNE BLANK |
| Remerks: | | the appropriately and | Jac 1 | ng de l'h | 1 504/00 | tact p | | STA | STANDARD PRESERVATION (Y): | RESERV | ATION | ΪË |
| | | · · | Send Results to: | sults to: | | | | 33 | HCI/VOC, HNO,/ME | HCI/VOC, HNOA/METALS | | |
| (| AIRBILL CO. | FedEx | Christine 1201 Pe | e Hettinger c. achtree St., | Christine Hettinger c/o METCALF & EDDY, INC. 1201 Peachtree St., N.E., 400 Colony Square, Suite 1101 | & EDDY, INC ony Square, 3 | Suite 11(| 000 | H_SQ/ | | | |
| | TRACKING NO: S | 807146292409 | | *lanta, Georgia 30361 34) 881-8010, FAX (| anta, Georgia 30361 34) 881-8010, FAX (404) 872-3161 | -3161 | | <u> </u> | STORED | (| ED IN ICE WN | EØN |

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| | CHAIN - OF - CUSTOD RECORD |

| LUT TTS ANALYTICAL PARAME METHODS | 2 2 | о — о ш | | <i>№М</i> - <i>О</i> | H -19 ms, -28m | 2 | 2 | | | | | | r Temperature: | | | 200 | STORED/SHIPPED IN ICEON |
|--------------------------------------|---------------------------------------|------------------|--|---|--|---------------------------------------|---------------|-----------------------|--|--|--|--|----------------|-----|-----------------|--------|--|
| | ROJECT NAME: Hunter LTM TASK ORDER ND | 021974-4103 SAMP | | DATE TIME MATRIX FIELD STE RES DEFTH NO. OF STANNDARD FULTERED V. (1) LAB (1) CONTS (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) | 2/17/17/1525 W 723-MW0604 MS/ 728MW06 5411 4 N - | 1750 W 710-MW0113 7/0/MW01 PP01 2 N - | 710-MW0213 71 | V - W / EMP Blank / 1 | | | | | | and | Sand Besuits to | Fel Ex | TRACKING NO: 807146292383 (404) 881-8010, FAX (404) 872-3161 |

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| | | Metcalf |

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| | | | 1 | ANA | ANALYTICAL PARAMETERS/METHODS | PARAM | ETERS/ | METH. | oDS |
| | CHAIN - OF | | | - 61 : | Σι | Ŧ | ٩. | Ŧ | G |
| Metcalf & Eddy | | | | - | <u>ц</u> н | <u>ш к</u> | ပ က | Δ <u>Τ</u> | ~ O |
| PROJECT NAME: Hunter LTM | W | TASK ORDER NO. | | s S | o L | 0 – م م – ں | | <u> </u> | |
| PROJECT NO: 021974-4103 | 03 | SAMPLE EVENT: | | 4 | <u>5</u> | - a | | 0 | |
| LABORATORY ID: AST | | PROGRAM TYPE: | - | A _ | £ | ш (л | · · · | | |
| SAMPLER(S) NAME: D Howard / G Rowel | G Rowell | SAMPLER(S) SIGNATURE: David House | 2 Anell | D | CVA | | | | |
| | | | • | | GFAA | | | | |

| SAMPLER | S) NAME: | 110 | SAMPLER(S) NAME: D HOWArd / G KOWEI | SAMPLE | R(S) SIGNATURE: | mzA | K Mura | 17/17 | Konell | <u> </u> | GFAA | | |
|--------------------------|--------------|----------------|-------------------------------------|--------------------|-----------------|---|----------------------|--------------------------------|---|------------|-------|-----------------------|-------------|
| DATE | TIME | MATRIX (SW) | FIELD SAMPLE ID | SITE ID | RES | DEPTH N (FT) C | NO OF P | STANADARD PRESERV. (YN)* | (I) LAB (I) LAB (I) HELD | .oV bodteM | 6-614 | | |
| 21199 | 2/17/99 1130 | 3 | 728-EB01 | IOMWSZL | B# 14 | | С | 2 | (| | 7 | | 0 |
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| | 1200 | Ż | 728-MW6104 | 728MW61 | PPOL | | Ъ | 2 | l | | х | | ()) |
| | 1405 | M | 728-MW6304 | 728MW63 | PPOL | | ц | N | | | え | | M |
| > | | M | TEMP | Blank | | | | | | | | | |
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| Relinquished, by: | Xq-þ | < | Date/Time: | ime: Received, by: | by: | | | Date/Time: | me: | | | Cooler Temperature: | ture: |
| (Signature) ⁽ | Am | | 7/17 Dur | 2/17/99/1900 Lip. | Paye-1. | J | | 12 | 18 99 09 | 09:15 | TEMI | TEMPBRANK= 1°C | |
| Remarka: | - | | (den M.C. | minally 21 34 39 | | Erce | les: c | aller | let i en | H=A | | (09156) | <56.58) |
| | | | i i | | Sand F | Sand Beelifts to: | · | | | •• • | | CH) HOLVOC | |
| | | | AIRRILI CO | E . I T < | Christ 1201 | ine Hetting | ger c/o NE. | IETCALF & | Christine Hettinger c/o METCALF & EDDY, INC. 1201 Peachtree St. N.E. 400 Colony Square. Suite 1101 | uite 110 | | HNO3/METALS H2SQ4/ | |
| | (| | ់ត | 9237 | | Atlanta, Georgia 30361 4) 881-8010, FAX (404) 872-3161 | a 30361 0, FAX (4 | 04) 872-3 | 161 | | | UI HEK | D IN ICE |
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SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

| neicail & coug | |
|---|---|
| TO BE COMPLETED BY. SUBCENTARCHOR CONTRACTOR | T RECEIVED FROM METCALF & EDOY |
| UPON COMPLETION, FAX TO THE DESIGNATED MAE REPRESENTATIVE LISTED BEL | OW SAME DAY AS SHIPMENT |
| C. Hettinger | FAX # (404) 872-3161 |
| NETCALF & EDDY Representative <u>C. METTINGET</u> | PROJECT # Hunter LTM |
| | TODAY'S DATE 2/18 99 |
| AMPLE CUSTODIAN PARTY | |
| ATE/TIME SAMPLES RECEIVED | NO. OF COCLERS |
| IRBILL NUMBER _ 807 146 292 394 | IN SHIPMENT |
| COCLER OPENED: DATE _ 2/18/99 _ TIME _ 9:40 | - |
| CHAIN OF CUSTODY SEAL INTACT? YES NO | |
| | |
| SAMPLE LABELS PRESENT? YES NO | |
| BOTTLE LABELS CORRESPOND W/COC? YES NO | i de la companya de l |
| TYPE OF COLLANT USED BAGGED 1CE | X |
| COOLANT CONDITION: MELTED PARTIAL | LY MELTED/FROZEN |
| COOLER NUMBER $\# \frac{1400}{1400}$ (cooler #1) TEMP IN | |
| # | |
| # | |
| # | |
| # | (3) |
| RECORD TEMPERATURE BLANK (1) (2) | |
| | |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT | |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING INTACT | T) NFFECTED |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT | TT) NEFECTED |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES A | (FFECTED |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES A | (FFECTED |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES A | (FFECTED |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES A | (FFECTED |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT | (FFECTED |



SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

TO BE COMPLETED BY SUBCINTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY. UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT .: .: ~ N 872-3161 404 FAX # 1 METCALF & EDDY Representative . LTM PROJECT # ASI SUBCONTRACTOR ____ TODAY'S DATE RUAN DIVER SAMPLE CUSTODIAN_ 19:15 2/18/ 99 DATE/TIME SAMPLES RECEIVED NO. OF COOLERS 6 807 146 292 409 IN SHIPMENT AIRBILL NUMBER __ 2/18/99 9145 TIME COOLER OPENED: DATE NO YES CHAIN OF CUSTODY SEAL INTACT? NO YES CHAIN OF CUSTODY PROVIDED? NO YES SAMPLE LABELS PRESENT? BOTTLE LABELS CORRESPOND W/COC? YES NO 15AGGED TYPE OF COLLANT USED PARTIALLY MELTED/FROZEN COOLANT CONDITION: MELTED FROZEN 6 °C 1685 TEMP INSIDE COOLER COOLER NUMBER 200 (3) (2) RECORD TEMPERATURE BLANK (1) _ 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-MW8WH 228-MW6504 TEMP BLANK 728-MWNOY, 728-MWOGOY



SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTOCIAN FOR EACH SHIPMENT RECEIVED FROM METCALE & EDDY. UPON COMPLETION, FAX TO THE DESIGNATED MAE REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT

| | (1 1) 972-3141 |
|--|---|
| METCALF & EDDY Representative | 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 | NO. OF COCLERS |
| COOLER OPENED: DATE TIME TIME | |
| CHAIN OF CUSTODY SEAL INTACT? YES NO | |
| CHAIN OF CUSTODY PROVIDED? YES NO | |
| SAMPLE LABELS PRESENT? YES X NO | |
| BOTTLE LABELS CORRESPOND W/COC? YES X NO | |
| TYPE OF COLLANT USED BAGGED ICE | X |
| COOLANT CONDITION: MELTED PARTIALI | LY MELTED/FROZEN |
| COOLER NUMBER # 1684 Cod A #44 TEMP INS # # # RECORD TEMPERATURE BLANK (1) (2) CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING INTACT? IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AF | SIDE COOLER <u>3 °C</u> (3) (3) FECTED |
| LIST SAMPLE ID'S IN EACH SHIPMENT: 728 -MWO664 MS TEMP BLANK | =/MSD, 710-MW0113,710-MWC |
| | |



SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

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| SUBCONTRACTOR A S I PROJECT # TUPATCI LITT SAMPLE CUSTODIAN Eyan Divee TODAY'S DATE 2 18 99 DATE/TIME SAMPLES RECEIVED 2 18 95 05:15 NO. OF COOLERS AIRBILL NUMBER 807 196 292 372 NO. OF COOLERS 6 COOLER OPENED: DATE 2/18/99 TIME 9:56 COOLER OPENED: DATE 2/18/99 TIME 9:56 CHAIN OF CUSTODY SEAL INTACT? YES NO 10 CHAIN OF CUSTODY PROVIDED? YES NO 10 SAMPLE LABELS PRESENT? YES NO 10 SAMPLE LABELS CORRESPOND W/COC? YES NO 10 TYPE OF COLLANT USED BACGED / CE 70 10 COOLER NUMBER # 16 89 (cooler #5) TEMP INSIDE COOLER 3°C COOLER NUMBER # 16 89 (cooler #5) TEMP INSIDE COOLER 3°C # | Meicall & Divy | |
|--|---|---|
| METCALF & EDDY Representative C. Hottimger FAX # $(4cA) 872-3161$ SUBCONTRACTOR A'S I PROJECT # Humter LTM SAMPLE CUSTODIAN Evant Divee TODAY'S DATE 2.18/39 DATE/TIME SAMPLES RECEIVED 2.18/39 05:15 NO. OF COOLERS AIRBILL NUMBER 807/96 292 372 NO. OF COOLERS 6 COOLER OPENED: DATE 2/18/99 TIME 9:55 CHAIN OF CUSTODY SEAL INTACT7 YES NO IN SHIPMENT CHAIN OF CUSTODY FROVIDED? YES NO IN SHIPMENT SAMPLE LABELS ORRESPOND W/COC7 YES NO IN SHIPMENT FROZEN COOLER NUMBER $\frac{1689}{(cooler ftS)}$ TEMP INSIDE COOLER 3°C COOLER NUMEER $\frac{1689}{(cooler ftS)}$ TEMP INSIDE COOLER 3°C # | | |
| METCALF & EDDY Representative | | (ADA) 872-3161 |
| SUBCONTRACTOR ASL FROLEN # SAMPLE CUSTODIAN $Eyanl Divee$ TODAY'S DATE $2 18 99$ DATE/TIME SAMPLES RECEIVED $2 18 99$ OS!15 NO. OF COCLERS AIRBILL NUMBER $807/96 292372$ IN SHIPMENT 6 AIRBILL NUMBER $807/96 292372$ IN SHIPMENT 6 COOLER OPENED: DATE $2/18/99$ TIME $7:56$ CHAIN OF CUSTODY SEAL INTACT? YES NO In SHIPMENT CHAIN OF CUSTODY PROVIDED? YES NO In SHIPMENT CHAIN OF CUSTODY PROVIDED? YES NO In SHIPMENT SAMPLE LABELS CORRESPOND W/COC? YES NO In SHIPMENT BOTTLE LABELS CORRESPOND W/COC? YES NO In SHIPMENT COOLANT CONDITION: MELTED PARTIALLY MELTED/FROZEN Image: Non State S | | - The france of The |
| SAMPLE CUSTODIAN Evant Evant <td>SUBCONTRACTORA'S I</td> <td></td> | SUBCONTRACTORA'S I | |
| DATE/TIME SAMPLES RECEIVED NO. OF COOLERS AIRBILL NUMBER | SAMPLE CUSTODIAN DIVER | _ TODAY'S DATE |
| AIRBILL NUMBER $307/96292372$ NO. OF COOLENS 6 NO. OF COOLENS 6 | DATE/TIME SAMPLES RECEIVED _ 2/18/95 05:15 | |
| COOLER OPENED: DATEYESNO | RAD 1414 297, 377 | |
| CHAIN OF CUSTODY SEAL INTACT? YES NO CHAIN OF CUSTODY PROVIDED? YES NO CHAIN OF COLLANT USED <u>BACGED / CC</u> BOTTLE LABELS CORRESPOND W/COC? YES NO CHAIN OF COLLANT USED <u>BACGED / CC</u> COOLANT CONDITION: MELTED PARTIALLY MELTED/FROZEN FROZEN FROZEN FROZEN FROZEN COOLER NUMBER # <u>1689 (CCC) (CCC</u> | COOLER OPENED: DATE 7/18/99 TIME 9:56 | . |
| CHAIN OF COSTOL FRONTED. SAMPLE LABELS PRESENT? YES NO BOTTLE LABELS CORRESPOND W/COC? YES NO TYPE OF COLLANT USED <u>BACGED / LG</u> COOLANT CONDITION: MELTED COOLER NUMBER # <u>/ 6 & 9 (creater 45)</u> TEMP INSIDE COOLER <u>3°C</u> # # # # RECORD TEMPERATURE BLANK (1) <u>/ °C</u> (2) (3) IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED | CHAIN OF CUSTODY SEAL INTACT? YES V NO | |
| SAMPLE LABELS PRESENT: UN NO BOTTLES IN SHIPMENT: (BROKEN OF BOTTLES IN SHIPMENT: (BROKEN OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)) IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED | | |
| TYPE OF COLLANT USED | | |
| TYPE OF COLLANT OSES | BOTTLE LABELS CORRESPOND W/COC? YES | - · · · · · · · · · · · · · · · · · · · |
| COOLER NUMBER # 1689 (cooler t+5) TEMP INSIDE COOLER 3°C # # | TYPE OF COLLANT USED | |
| COOLER NUMBER # | COOLANT CONDITION: MELTED PARTIAL | LLY MELTED/FROZEN |
| # | FROZEN | |
| # | COOLER NUMBER # (689 (cooler #5) TEMP IN | |
| # | # | |
| # | # | |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?) IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED | # | |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?) IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED | # | |
| CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?) IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED | RECORD TEMPERATURE BLANK (1) / °C (2) | (3) |
| IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED | CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT | ?) |
| | IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES A | AFFECTED |
| UT CANDIE ID'S IN EACH SHIPMENT: 728-EBOI, 728-MW0104, 728-MW 6004, | | |
| UT CANDIE ID'S IN EACH SHIPMENT: 728-EBOI, 728-MW0104, 728-MW 6004, | | |
| LIST CANDIE ID'S IN EACH SHIPMENT: 708-EBOI, 728-MWOIDY, FOO-MW OODI, | | TO HALL GADY |
| 728-MW6104, 728-MW6304, TEMP BLANK | LIST SAMPLE ID'S IN EACH SHIPMENT: 78-EBOI, 728- 728-MW6104, 728-MW6304, TEMP, | -MWOIDY, FLD-MW ODDI, BRANK |
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| FIELD LOG | BOOK SAMPLI | NG DATA: WELL WORK SH | IEET | Molcall & Eddy |
|-------------------------------------|--------------------------|---|---------------------------------------|---------------------------------------|
| •···· | 6. Rowell D. H. | / | | 728-MW/ |
| PROJECT NAME: | HAAF 3rd at | v Sampling | LOCATION | B.728 |
| | - <u>17 - 99</u> Time s | | Well secured | upon arrival? 🕅 N |
| 1. Casing Diameter | (d) <u>}</u> inches + 12 | e = <u>0.17</u> ft | 1. Standing water (g | al.) = <u>/.7</u> |
| 2. Depth of water fi | rom T.O.C3 | <u>5.28</u> ft | 2. X <u> </u> | weil volumes |
| 3. Depth of well from | m T.O.C/ 3 | <u>.2</u> ft | 3. =5.) | gallons to purge |
| 4. Feet of standing | water (h)?, | <u>92ft</u> | 4. Purging Method | Waterra Pump |
| CALCULATION: Standing water volu | me = $\pi[(d)^2 +$ | 4](h) | | |
| | = 3.14 [(_0 | <u>.17</u> tt.)2+4](<u>9.9</u> | 2ft.) x 7.48 gal / ft.3 = _ | <u>/.7</u> gal |
| | _ | pН | Conductivity | Temperature, (F) |
| 1.Well volume = | <u> </u> | 6.15 | 220 | 18.3 |
| 2.Well volume = | | 6.52 | 225 | 18-4 |
| 3.Well volume = | <u> </u> | 6.18 | 217 | 18.4 |
| 4.Well volume = | gal. | | <u> </u> | <u>.</u> |
| 5.Well volume = | gal. | | | |
| Ground water sam | ple | | | · · · · · · · · · · · · · · · · · · · |
| Sampling method | - Disposable Tet | for Bailer | Field preservation - | |
| Sample Descriptio | ח | | · · · · · · · · · · · · · · · · · · · | · |
| Odor: | | • · · · · · · · · · · · · · · · · · · · | ····· | |
| | | | | |
| Appearanc | e: | | | · · · · · · · · · · · · · · · · · · · |
| | | | · | |
| Air Monitoring Equ | vipment used: <u>OVA</u> | | | |
| Reading: | Breathing zone: | Ø ppm. | | |
| | | | | |
| COMMENTS: | | | | |
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| · | | | <u> </u> | · · · · · · · · · |

| FIELD LOG BOOK SAMPLING DATA: GROUNDWATER MONITORING WELL WORK S | |
|---|---|
| SAMPLED BY: G. Prewell D. Howinsid | |
| PROJECT NAME: HAAF 3rd atr Sampling | LOCATION: B.728 |
| Date sampled: 2- 17-59 Time start 1514 End 1 | Well secured upon arrival? (Y) N |
| 1. Casing Diameter (d) inches + 12 =ft | 1. Standing water (gal.) =/. L/ |
| 2. Depth of water from T.O.C. 4.83 ft | 2. X <u> </u> |
| 3. Depth of well from T.O.C. 12.9 tt | 3. = <u>4. </u> gallons to purge |
| 4. Feet of standing water (h)6.07ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| $= 3.14 [(0.17 \text{ ft.})^2 + 4] (8.10 \text{ ft.})^2$ | $\frac{0.7}{1.0}$ ft.) x 7.48 gal / ft.3 = <u>1.9</u> gal |
| рH | Conductivity Temperature, (F) |
| 1.Well volume = <u>1.9</u> gal. <u>6.12</u> | 687 20,0 |
| 2.Well volume = 2.8 gai. 6,19 | 598 20,0 |
| 3.Well volume = <u>4.2</u> gal. <u>6.3.3</u> | 613 20,3 |
| 4.Well volume ≂ gal. | (|
| 5.Well volume = gal. | |
| Ground water sample | |
| Sampling method - Disposable Teflon Bailer | Field preservation |
| Sample Description | |
| Odor: <u>Petroleum</u> | |
| Color: | |
| Appearance: | |
| Weather Conditions: | · · · · · · · · · · · · · · · · · · · |
| Air Monitoring Equipment used: <u>OVA</u> | · · · |
| Reading: Breathing zone: <i>Sppm</i> | |
| 1., - In Well: | · · · · · · · · · · · · · · · · · · · |
| COMMENTS: | |
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| · · · · · · · · · · · · · · · · · · · | |
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| FIELD LOG | BOOK SA | MPLING RING W | DATA: | ET | Melcal & Eddy |
|---------------------------------------|---------------|----------------------|--|--|--------------------|
| SAMPLED BY: | 6. Rower | 1/ D.Ho | neard | | 728-MW11 |
| PROJECT NAME: | HAAF 3 | atr | Sampling | LOCATION:_ | B.728 |
| Date sampled: | | | | Well secured u | pon arrival? 🕅 N |
| 1. Casing Diameter | (d) inc | hes + 12 = | <u>0.17</u> ft | 1. Standing water (ga | l.) = <i>1. 0</i> |
| 2. Depth of water fr | om T.O.C | 6.22 | ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from | | | | 3. = 3.0 | _ gallons to purge |
| 4. Feet of standing | water (h) | 6.08 | ft | 4. Purging Method | Waterra Pump |
| CALCULATION: Standing water volu | me = π | (d) ² +4] | (h) | e e e | |
| | = 3. | 14 [(<u>0, /</u> | <u>7_ft.)2+4](6.08</u> | _ft.) x 7.48 gal / ft.3 = | 1.0 gal |
| 1.Well volume = | 1. () | gal. | рн ^{р.н.} . 6,1,5 .5.72 | Conductivity 81.6 | Temperature, (F) |
| 2.Well volume = | • | gal. | Dir 6.5 5,65 | 77.6 | 19,2 |
| 3.Well volume = | 7.0 | gal. | DH 6.18 5.52 | 68.6 | 19.0 |
| $4.Well volume = \$ | | | 5.5 04 | ······································ | |
| 5.Well volume = | | | | · | |
| Ground water sam | | | | · · · · · · · · · · · · · · · · · · · | |
| Sampling method | | le Teflo | n Bailer | Field preservation - | |
| Sample Descriptic | n | | | · | |
| • • | - | | | | |
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| Reading: | | 1 | · · · · · | · · · · · · · · · · · · · · · · · · · | |
| neading. | | | | | |
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| FIELD LOG BOOK SAM | PLING DATA: NG WELL WORK SH | IEET | Melcali & Eddy |
|--|--|--|---------------------------------------|
| SAMPLED BY: 6. howel | D. Howard | WELL ID: | 728-MW60 |
| PROJECT NAME: HAAF 312 | atr Sampling | LOCATION: | B.728 |
| Date sampled: 2 - 17-99 Ti | ime start <u>1/45</u> End <u>1/5</u> | 55 Well secured up | oon arrival? (Y) N |
| 1. Casing Diameter (d) inches | | 1. Standing water (gal. | |
| 2. Depth of water from T.O.C. | 6.6/ ft | 2. X <u>3</u> | well_volumes |
| 3. Depth of well from T.O.C. | <u>/3.0</u> ft | 3. = <u>3.3</u> | gallons to purge |
| 4. Feet of standing water (h) | <u>6.39</u> ft | 4. Purging Method <u>1</u> | Vaterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)$ | l) ² +4](h) | | |
| = 3.14 | [(<u>0.17</u> tt.) ² + 4](<u>6.</u> 3 | | Ć, |
| 1.Well volume = . | pH gal. 5.82 | Conductivity | Temperature, (\mathbf{F}) |
| | gal. <u>5.8/</u> | 239 | 19.9 |
| 3.Well volume = <u>9.3</u> | <u> </u> | 218 | 18.8 |
| 4.Well volume = | _gal | | (|
| 5.Well volume = | _gal | · | |
| Ground water sample | | · · · · · · · · · · · · · · · · · · · | · |
| Sampling method - D:sposable | Teflon Bailer | Field preservation | · · · · · · · · · · · · · · · · · · · |
| Sample Description | · · · | | |
| Odor: | | | · |
| Color: | | | |
| Appearance: | · · · · · · · · · · · · · · · · · · · | | |
| Weather Conditions: | · . | | |
| Air Monitoring Equipment used:O | | | |
| Reading: Breathing zon | е: _ <i>Øppm</i> | | |
| | ppm | | |
| COMMENTS: | | | |
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| GROUNDWATER | JOK SAMPLING | UATA: LL WORK SI | IFFT | Metcalt & Eddy |
|---|---------------------------------------|--|--|---------------------|
| SAMPLED BY: | | | | 728-MW61 |
| PROJECT NAME: | | | | B.728 |
| Date sampled: | | | | upon arrival? (Y) N |
| Date sampled. | | | | |
| 1. Casing Diameter (d)_ | inches + 12 = | <u>0.17</u> ft | 1. Standing water (ga | ll.) =/. / |
| 2. Depth of water from | т.о.с. 6.6 | <u>}ft</u> | 2. X <u> </u> | |
| 3. Depth of well from T. | 0.C. <u>13</u> . | <u>D</u> tt | 3. = | gallons to purge |
| 4. Feet of standing wate | er (h) 6.33 | ft | 4. Purging Method _ | Waterra Pump |
| CALCULATION: Standing water volume | $=\pi[(d)^{2}+4]($ | h) | | |
| • | = 3.14 [(<u>0.17</u> | _ft.) ² + 4] (<u>6.</u> 3 | <u></u> ft.) x 7.48 gal / ft. ³ = _ | |
| | | рН | Conductivity | Temperature, (P) |
| 1.Well volume = | gal. | 5.63 | 126 | |
| 2.Well volume = | <u>2.2</u> gal. | 5.97 | 123 | 19.3 |
| 3.Well volume = | 3.3 gal. | 5.62 | 118 | 19,3 |
| 4.Well volume = | gal | | <u> </u> | |
| 5.Well volume = | gal. | | | |
| Ground water sample_ | · · · · · · · · · · · · · · · · · | | · · | |
| Sampling method | Disposable Teflon | Bailer | Field preservation - | |
| Sample Description _ | | | · | |
| Odor: | | | | · · · · · · |
| | · · · · · · · · · · · · · · · · · · · | | | |
| | ·. | | | |
| Weather Conditions: _ | | | | |
| Air Monitoring Equipme | | | | |
| • • • • | - | | | |
| | | | | |
| COMMENTS: | ,, | | | |
| <u>x</u> | | · . | | |
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| <u>, , , , , , , , , , , , , , , , , , , </u> | | | ······································ | |

| SAMPLED BY: | 6. Rowel | | | | 728-MW63 |
|-----------------------|--------------|----------------------|--|---------------------------------------|---------------------------------------|
| PROJECT NAME:_ | HAAF 35 | atr | Sampling | | N: <u>B.728</u> |
| Date sampled: 2 | - 17 . 59 | Time start | 1350End 14 | Well secure | ed upon arrival? 🚫 N |
| I. Casing Diameter (| d) inch | es + 12 = _ | 0.17 ft | 1. Standing water | (gal.) =/, ~ |
| 2. Depth of water fro | m T.O.C | 6.8 | 7_ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from | T.O.C | 14.0 | <u> </u> | 3. = <u>3. </u> | gallons to purge |
| 4. Feet of standing w | /ater (h) | 7.1 | <u>3 </u> | 4. Purging Metho | d Waterra Pum |
| CALCULATION: | | (d) ² +4] | | . · · | |
| Standing water volun | - | ••• | - | <u>/3_</u> ft.) x 7.48 gal / ft.3 - | = <u>(. 2</u> 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 = | 3.4 | gal. | 5.77 | 139.5 | 19.5 |
| 4.Well volume = | | _ gal. | | | <u> </u> |
| 5.Well volume = | | gal. | 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | · · · · · · · · · · · · · · · · · · · |
| Ground water samp | le | | | | |
| Sampling method - | Disposable | Teflos | - Bailer | _ Field preservation | 1 |
| Sample Description |) | | | | |
| Odor: | | | | · · · · · · · · · · · · · · · · · · · | |
| Color: | | | | | |
| Appearance | • | | | · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
| Weather Conditions | s: | | | | |
| Air Monitoring Equi | pment used: | OVA | | · · · · · · · · · · · · · · · · · · · | |
| Reading: | Breathing zo | one: | opm | | |
| | In Well: | Pi | pm | · · · · · · · · · · · · · · · · · · · | |
| COMMENTS: | , | <u> </u> | · | | |
| | | | | | |



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| | FIELD LOG BOOK SAMPLING DATA GROUNDWATER MONITORING WELL WO | A: DRK SHEET | Metcall & Eddy |
|-----|--|--|---------------------------------------|
| 1 | SAMPLED BY: G. Ruwell D. Hurm | | 728-MW64 |
| N 🔎 | PROJECT NAME: HAAF Zond atr Samp | | : B.728 |
| | Date sampled: 2 - 17 - 99 Time start 1350 | | upon arrival? (Y) N |
| | 1. Casing Diameter (d) inches + 12 =t | 1. Standing water (g | gal.) =/.3 |
| | 2. Depth of water from T.O.C. <u>5.44</u> ft | 2. X <u> </u> | well volumes |
| | 3. Depth of well from T.O.Cft | 3. = 3.9 | gallons to purge |
| | 4. Feet of standing water (h) 7.56 ft | 4. Purging Method | Waterra Pump |
| · | CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | | |
| | = 3.14 [(<u>0.17</u> ft.) ² + 4 | $\frac{7.56}{\text{ft.}} \times 7.48 \text{ gal} / \text{ft.}^3 = \frac{1}{2}$ | <u>1.3</u> gal |
| | pH | Conductivity | Temperature, (F) |
| | 1.Well volume = 1.3 gal. 5.12 | 2 127.8 | 1917 |
| | 2.Well volume = 2.6 gal. 5,3 | 4 46.6 | 19,1 |
| | 3.Well volume = 3.9 gal. 5.3 | 3 43.9 | 18.9 |
| | 4.Well volume = gal. | | · · · · · · · · · · · · · · · · · · · |
| | 5.Well volume = gal. | | |
| | Ground water sample | · · · · · · · · · · · · · · · · · · · | |
| | Sampling method - Disposable Teflon Bain | Field preservation | |
| | Sample Description | · | |
| | Odor: | | |
| | Color: | · · · | |
| | Appearance: | · · · · · · · · · · · · · · · · · · · | |
| | Weather Conditions: | | |
| | Air Monitoring Equipment used: <u>OVA</u> | | |
| | Reading: Breathing zone: <u><i>Ppm</i></u> | · | |
| | In Well:ppm | · · · · · · · · · · · · · · · · · · · | |
| | COMMENTS: | | |
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| FIELD LOG BOOK SAMPLING DATA: GROUNDWATER MONITORING WELL WORK SHEET | | Molcali & Eddy |
|---|--|---------------------------------------|
| SAMPLED BY: G. Proweel / D. Howard | WELL ID: | 728-MW65(|
| PROJECT NAME: HAAF 312 Atr Sampling | LOCATION: | |
| Date sampled: 2-17-99 Time start 1440 End 1450 | Well secured u | pon arrival? 🚫 N |
| 1. Casing Diameter (d) 2 inches + 12 = <u>0.7</u> ft 1. Si | tanding water (gal | .) = 1.1 |
| 2. Depth of water from T.O.C. L. 20 ft 2. X | 3 | well volumes |
| 3. Depth of well from T.O.C. <u>/3.0</u> ft 3. = | 3.3 | gallons to purge |
| 4. Feet of standing water (h) 6.60 ft 4. P | urging Method | Naterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | | |
| $= 3.14 [(0.17 \text{ ft.})^2 + 4] (10.60 \text{ ft.}) \times 10^{-10}$ | 7.48 gal / ft. ³ =/ | <u>' , / g</u> al |
| pH 0 1.Well volume = | Conductivity | Temperature, (P) 20.7 |
| 2.Well volume = 2.2 gal. 5.86 | 158.9 | 20.5 |
| 3.Well volume = <u>3.3</u> gal. <u>5.84</u> | 151.2 | 20.3 |
| 4.Well volume = gal | | |
| 5.Well volume = gal | ······································ | |
| Ground water sample | | |
| Sampling method - Disposable Teflon Bailer Field | d preservation | · . |
| | н | |
| Sample Description | | · |
| Odor: | | |
| Color: | | |
| Appearance: | • | |
| Weather Conditions: | | |
| Air Monitoring Equipment used: <u>OVA</u> | | |
| Reading: Breathing zone: <i>ppm</i> | | |
| In Well: | | |
| COMMENTS: | | |
| | <u> </u> | (|
| | | · · · · · · · · · · · · · · · · · · · |
| | | |



FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA

| Date 2/17/99 | Location 728 - SWE 01 |
|---|---|
| Samplers Used <u>55 bow</u> | ······································ |
| recent excavations, vegetation, etc.) | cription as well as the presence of debris, surface sheens, $\int_{a}^{b} \frac{1}{\sqrt{2}} \frac{1}$ |
| Weather | ID |
| Description of sample <u>No Sediment</u> Time of sample collection <u>1045</u> OVA Readings Depth of water (for sediment sampling) | |
| Decontamination (page number references) <u><i>Wa</i></u> | , |
| Trowel | |
| Hand corer Hand auger | |
| BowlsSplit spoons | |
| Photograph frame numbers NA | |
| Signature of field team personnel making data entry | G. Rowell |
| | |

FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA



| Date $2/17/99$ Location 728 SWE03 |
|---|
| Samplers Used <u>55 bowl</u> , <u>55 spoon</u> , <u>encore</u> |
| |
| Drawing of sampling location (including location description as well as the presence of debris, surface sheens, |
| recent excavations, vegetation, etc.) / / |
| Duncan st. N |
| Ditch |
| SWE03 A 728 |
| |
| Weather |
| |
| Soil/sediment sampling parameters: 8260 (8021) 8100 8310 8270 GRO DRO PPM RCRA 8080 Description of sample |
| Time of sample collection 0930 |
| OVA Readings Depth of water (for sediment sampling) $3''$ |
| Depth of water (for sediment sampling) 3 " |
| |
| Decontamination (page number references) <u>hoveplan pA/O-Z</u> |
| Spoons or spatulas |
| Trowel |
| Hand corer |
| Hand auger Bowls |
| |
| Split spoons |
| Photograph frame numbers |
| Signature of field team personnel making data entry 6. Rowell |
| |

SITE RANKING FORM

| 000 | nty: <u>Chatham</u> | Facility ID#: <u>9025035</u> | and 9025049 Date Ranked: 3/19/ | 99 | |
|------------|--|---|---|----|--|
| soil | _ CONTAMINATION | · | | · | |
| Α. | Total PAHs - Maximum Concentrat site (Assume <0.660 | | Total Benzene - Maximum Concentration found on the site | | |
| | gasoline was stored o | | □ ≤ 0.005 mg/kg = 0 | | |
| | □ ≤ 0.660 mg/kg | = 0 | □ >0.005-.05 mg/kg = 1 | | |
| | □ > 0.66 - 1 mg/kg | = 10 | ■ >.05- 1 mg/kg* = 10 | | |
| | | = 25 | □ > 1-10 mg/kg = 25 | | |
| | ■ > 10 mg/kg | = 50 | □ > 10 - 50 mg/kg = 40 | | |
| | | | □ > 50 mg/kg = 50 | | |
| | Depth to Groundwater (bls = below land surf | | | • | |
| | □ > 50' bls | = 1 | | | |
| | □ > 25'-50' bls | = 2 | | | |
| | | | · | | |
| | □ > 10'-25' bis | = 5 | | | |
| | □ > 10'-25' bis ≤10 bls | = 5 = 10 | | | |
| i III i | ■ <10 bls | = 10 | <u>0) x (C. 10) = (D. 600)</u> | • | |
| | ■ ≤10 bls n the blanks: (A. <u>50</u> | = 10 _) + (B. <u>10</u>) = (<u>6</u> | <u>0)</u> x (C. <u> 10)</u> = (D. <u> 600)</u> | | |
| | ■ <10 bls | = 10 _) + (B. <u>10</u>) = (<u>6</u> | <u>0)</u> x (C. <u>10</u>) = (D. <u>600</u>) | | |
| RO | ■ ≤10 bls In the blanks: (A. <u>50</u> OUNDWATER CONTAMI Free Product (Nonaque) hydrocarbons; See gui) definition of "sheen"). | = 10 _) + (B. <u>10</u>) = (<u>6</u> <u>NATION</u> eous-phase liquid F. | 0) x (C. 10) = (D. 600) Dissolved Benzene - Maximum Concentration at the site (One well must be located at the source of the release) | Df | |
| RO | ■ ≤10 bls In the blanks: (A. <u>50</u> <u>SUNDWATER CONTAMI</u> Free Product (Nonaque hydrocarbons; See gui definition of "sheen"). | = 10 _) + (B. <u>10</u>) = (<u>6</u> <u>NATION</u> eous-phase liquid F. | Dissolved Benzene - Maximum Concentration at the site (One well must be located at the source of the release) | Df | |
| RO | I > 10 bls In the blanks: (A. <u>50</u> CUNDWATER CONTAMI Free Product (Nonaqui hydrocarbons; See gui definition of "sheen"). No free product = | = 10 _) + (B. <u>10</u>) = (<u>6</u> <u>NATION</u> eous-phase liquid F. delines for | Dissolved Benzene - Maximum Concentration at the site (One well must be located at the source of the release) $\Box \leq 5 \text{ ug/L} \Rightarrow 0$ | of | |
| <u>RO</u> | I ≤ 10 bls In the blanks: (A. <u>50</u> CUNDWATER CONTAMI Free Product (Nonaquinydrocarbons; See guidefinition of "sheen"). No free product Sheen - 1/8" = | = 10 _) + (B. <u>10</u>) = (<u>6</u> <u>NATION</u> eous-phase liquid F. delines for | 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 | of | |
|)RO | ≤10 bls n the blanks: (A. <u>50</u> DUNDWATER CONTAMI Free Product (Nonaque hydrocarbons; See gui definition of "sheen"). No free product = Sheen - 1/8" = > 1/8" - 6" = | = 10 _) + (B. <u>10</u>) = (<u>6</u> <u>NATION</u> eous-phase liquid F. delines for 0 250 | Dissolved Benzene - Maximum Concentration at the site (One well must be located at the source of the release) $ \le 5 \text{ ug/L} = 0$ > 5 - 100 ug/L = 5 > 100 - 1,000 ug/L = 50 | Df | |
| SRO C | ≤10 bls n the blanks: (A. <u>50</u> DUNDWATER CONTAMI Free Product (Nonaque hydrocarbons; See gui definition of "sheen"). No free product = Sheen - 1/8" = > 1/8" - 6" = > 6" - 1 ft = | = 10 _) + (B. <u>10</u>) = (<u>6</u> <u>NATION</u> eous-phase liquid F. delines for 0 250 500 1,000 | 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 | of | |

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

Ĺ

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 | I. | Non-Public Water Supply |
|---------------|--|------------------------|---|
| | $ \begin{array}{c cccc} & & & & = 2000 \\ \hline & \leq 500' & & = 500 \\ \hline & > 500' - \frac{1}{4} & & & = 25 \\ \hline & > 1/4 & & & = 10 \\ \hline & > 1 & & & = 10 \\ \hline & > 1 & & & = 2 \\ \hline & > 2 & & & & = 2 \\ \hline & > 2 & & & & = 0 \\ \hline & & & & & & = 0 \\ \hline & & & & & & & \\ \hline & & & & & & & \\ \hline & & & &$ | | |
| J. Fill in | 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 the blanks: = (H0) + (I0) + (J50) | К.)) + (К | Distance from any Free Product to basements and crawl spaces □ Impacted = 500 □ ≤ 500' = 50 □ > 500' - 1,000' = 5 ■ > 1,000' or = 0 no free product X) = L50 |
| | (G. <u>1100</u> |) x (L | . <u> 500)</u> = M. <u> 55,000</u> |
| | (M. <u>55,000</u> |) + (D | 0. <u>600</u>) = N. <u>55,600</u> |
| <u>P.</u> | SUSCEPTIBILITY AREA MULTIPLIER | | |
| | □ If site is located in a low Groundwater Pollution | | |
| | All other sites = 1 |) Suscep | tibility Area - 0.5 |
| Q. | |) Suscep | tibility Area - 0.5 |
| Q. | All other sites = 1 | om this re | elease, been detected in any subsurface |
| Q. | All other sites = 1 <u>EXPLOSION HAZARD</u> Have any explosion vapors, possibly originating from the second second | om this re | elease, been detected in any subsurface |
| Q. | All other sites = 1 <u>EXPLOSION HAZARD</u> Have any explosion vapors, possibly originating frostructure (e.g., utility trenches, basements, vaults, explosion) | om this re | elease, been detected in any subsurface |
| | All other sites = 1 <u>EXPLOSION HAZARD</u> Have any explosion vapors, possibly originating frostructure (e.g., utility trenches, basements, vaults, or structure (e.g., utility trenches, basements, vaults, or Yes = 200,000 | om this re crawl sp | elease, been detected in any subsurface |

SITERANK FRM

9/97

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

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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"
 Endote 100 (2000)

| Submitted by UST Owner/Operator: | Prepared by Consultant/Contractor: | | |
|---|--|--|--|
| Name: Mr. Tom Fry | Name: David Wilderman | | |
| Company: HQs, 3d ID (Mech) & Fort Stewart | Company: Metcalf & Eddy, Inc. | | |
| Address: 1557 Frank Cochran Drive | Address: <u>Two Sun Court</u> | | |
| | Suite 200 | | |
| City: Fort Stewart State: GA | City: <u>Norcross</u> State: <u>GA</u> | | |
| Zip Code: 31314-4928 | Zip Code: 30092 | | |
| Telephone: 912-767-1078 | 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 Humphin's Signature: David Humpl Signature; Date:



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.

5/98

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. <u>Potentiometric Data</u>:

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. <u>Analytical Data</u>:

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 $\mu g/L$ (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 ($0.0311 \mu g/L$ 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 μ g/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 μ g/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**.

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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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5/98

APPENDIX I

FIGURES

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I-1



I-2









SWE01 - SURFACE WATER/SEDIMENT LOCATION FIRE HYDRANT POWER POLE NS - NOT SAMPLED BENZENE (U-UNDETECTED) TOTAL BTEX TOTAL PAHs (J-ESTIMATED) CONCENTRATIONS IN UG/L SAMPLES TAKEN 02/17/99 SCALE: 1" = 60' 60' 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 SAVANNAH, GEORGIA





FIGURE 4

ANNUAL MONITORING SPREADSHEET (BENZENE) - FOURTH QUARTER FORMER BUILDING 728, EPD FACILITY NO. 9025035 and 9025049 HUNTER ARMY AIRFIELD

| | | | BENZENE RESUL | TS (ug/L) | |
|--------|-------|----------|---------------|-----------|----------|
| WELL # | CAP-B | l'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

| | Fo | rmer Building Hu | 728, Fourth O Inter Army Airl | ATIONS (May 19 Quarterly Samplin field 025035 and 902 | g | |
|----------|-----------|---------------------|----------------------------------|--|------------|--------------|
| | Screen | Water | тос | Water Level | Surface | Free Prod. |
| Location | Interval | Depth, | Elevation, | Elevation, | Elevation, | Thickness |
| | ft, bgs | тос | ft, msl | ft, msl | ft, msl | 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 | |
| САР-В | | | | | | |
| 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 easing

msi-mean sea level

Measurements on 5/5/99

NA- not measured

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TABLE 2 : GROUNDWATER ANALYTICAL RESULTS, FOURTH QUARTERLY SAMPLING

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(MAY 1999)

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|-------------|--------|-------------|----------|----------|--------------|---------|------------|-----------|
| SITE | DATE | ТҮРЕ | (I/gu) | (I/gu) | (I/6n) | (I/gn) | (I/g/I) | (I/gn) |
| MW01 | 5/5/99 | Primary | D |)) | > | Þ | n | n |
| MW06 | 5/5/99 | Primary | D | D | 12 | D | 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 | 1000 COO | 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 | C068 | 22 | 270 | 1100 | 2282J | 1.66J |
| MW65 | 5/5/99 | Primary | 5 | 5 | 5 | ∍ | D | 1.60 |
| SMW01(B710) | | | NS | .SN | NS | NS | NS | NS |
| ARARS | | IWQS | 71.28 | 200,000 | 28,718 | 1 | | 1 |

U = Not Detected.

(-) = No IWOS listed.
 J = Result is estimated
 NS = Not Sampled

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TABLE 3 : SURFACE WATER ANALYTICAL RESULTS, FOURTH QUARTERLY SAMPLING (MAY 1999)

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

| | | RESULT | Benzene | Toluene | Ethylbenzene | Xylenes | TOTAL BTEX | TOTAL PAH |
|--------|--------|-----------|---------|---------|--------------|---------|------------|-----------|
| SITE | DATE | ТҮРЕ | (l/6n) | (I/gn) | (l/gn) | (I/gn) | (I/gn) | (I/6n) |
| SW01 | 2/5/99 | Primary | 2.15 | - | 0.8 | 2.3 | 6.2J | 0.33J |
| SW03 | 2/5/99 | Primary | ∍ | Þ | D | Þ | D | 4.8.) |
| SW1005 | 2/5/99 | Duplicate | 2.0J | 1 | 0.8 | 2.2 | 6.0J | 1.48J |
| ARARS | | IWOS | 71.28 | 200,000 | 28,718 | - | | F |
| | | | | | | | | |

U = Not Detected.

(-) = No IWOS listed.
 J = Estimated

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TABLE 4 : SEDIMENT ANALYTICAL RESULTS, FOURTH OUARTERLY SAMPLING (MAY 1999)

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

| | | RESULT | Benzene | Toluene | Fthvlhenzene | Xvlenes | TOTA! RTFX | TOTAI PAH |
|--------|--------|-----------|---------|----------|--------------|---------|------------|-----------|
| SITE | DATE | ТҮРЕ | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| SW03 | 2/5/99 | Primary | n | _ | n | n | n | 11.03J |
| SW1005 | 2/5/99 | Duplicate | n N | Э | D | D | þ | 5.92J |
| ARARS | | STL STL | 0.017 | 115 | 18 | 200 | | E. |
| | | | | | | | | |

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 | <u>Matrix</u> | Samples | Field Duplicates | Trip <u>Blanks</u> | Equipment <u>Blanks</u> |
|--------|----------|---------------|---------|---------------------|-----------------------|----------------------------|
| 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:

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

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 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 = Concentration of spike found Concentration of spike added

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 °C to 6 °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

Groundwater and Surface water:

<u>VOC's</u> - 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.

<u>PAHs</u> - 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:

<u>PAHs</u> - 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: Date:

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> LONG TERM MONITORING - BUILDING 728 PRIMARY RESULTS FOR GROUNDWATER EPD FACILITY NO. 9025035 & 9025049 HUNTER ARMY AIRFIELD

00002 728-MW6105 728MW61 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 05/05/39 <0.157 < 0.031 < 0.123 1.1.J < 0.097 < 0.302 < 0.214 < 0.107 < 0.164 Primary 1100 <5.0 <5.0 < 5.0 < 5.0 500 J 22 270 <u>е</u> 728-MW8005 < 0.0311 <0.157 Duplicate 1 < 0.302 728MW61 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 05/05/99 < 0.123 < 0.097 1.0.J < 0.107 < 0, 164 < 0.031 < 0.214 <5.0 1100 <5.0 <5.0 < 5.0 L 068 0.66 22 270 RESULT IS REJECTED. 728-MW6005 < 0.302 728MW60 <0.157 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.097 < 0.123 05/05/99 < 0.031 < 0.214 1.4 J < 0.164 <0.107 <0.5 Primary 1900 J <0.5 < 1900 160 < 0.5 < 0.5 2.9 410 728-MW1105 = RESULT IS ESTIMATED. <0.157 < 0.0311 <0.031 J <0.123 <0.302 728MW11 < 0.0311 < 0.097 < 0.0311 < 0.0311 05/05/99 < 0.0311 < 0.0311 <0.103 < 0.164 < 0.092 < 0.107 --- = Not analyzed 0.94 J <0.5 Primary €.0× 62 < 0.5 < 0.5 170 4 4 728-MW0605 < 0.0311 < = Not detected at indicated reporting limit <0.031 J 0.56 J 728MW06 <0.157 < 0.0311 <0.0311 < 0.0311 < 0.0311 05/02/99 < 0.0311 0.18 3.4 J <0.5 < 0.107 1.8 Primary 0. V <0.5 < 0.5 <0.5 < 0.5 < 0.5 6.5J 5.5J ы. Т 2 ł 728-MW0105 728MW01 <0.157 < 0.0311 < 0:0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 05/05/99 <0.097 <0.123 < 0.092 < 0.103 < 0.302 < 0.214 < 0.164 < 0.031 < 0.107 Primary <0.5 <0.5 < 0.5 0.1V <0.5 <0.5 < 0.5 < 0.5 I RESULT TYPE SAMPLE ID DATE Values represent total concentrations unless noted SITE (Units in ug/l) Indeno[1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(ghi)perylene Benzo(k)fluoranthene 1, 2-Dichlorobenzene Benzo(b)fluoranthene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Fluoranthene Benzo(a)anthracene Benzo(a)pyrene CONSTITUENT Phenanthrene Acenaphthene Acenaphthylene Chlorobenzene Xylene (total) Ethylbenzene Anthracene Naphthalene Chrysene Toluene Fluorene Benzene Pyrene

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> LONG TERM MONITORING - BUILDING 728 PRIMARY RESULTS FOR GROUNDWATER EPD FACILITY NO. 9025035 & 9025049 HUNTER ARMY AIRFIELD

728-SW0305 £ 728SWE03 1. U (05/05/99 < 0.302 < 0.097 < 0.157 0.50 0.11 < 0.164 0.34 <0.092 Primary < 0.5 0.47 0.22 < 0.5 <1:0 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 0.39 0.69 0.12 1.6J 0.25 0.11 728-SW1005 728SWE01 **Duplicate 1** < 0.0311 05/05/99 < 0.0311 < 0.097 < 0.157 < 0.302 0.080 < 0.123 < 0.103 < 0.164 < 0.092 0.090 < 0.107 0.072 <0.5 < 0.35J <0.5 < 2.2 <0.5 0.047 < 0.5 0.84 2.0 J 1.0 = RESULT IS REJECTED. 0.8 728-SW0105 < 0.302 728SWE01 < 0.0311 <0.097 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.157 05/05/99 < 0.123 < 0.103 < 0.164 < 0.092 <0.5 < 0.031 < 0.107 Primary < 0.5 0.33J 2.3 < 0.5 2.1 J < 0.5 1.0 0.8 728-MW6505 <0.302 <0.097 <0.0311 728MW65 < 0.0311 < 0.0311 05/05/99 < 0.0311 < 0.0311 < 0.123 < 0.103 < 0.0311 <0,157 < 0.031 < 0.164 < 0.092 < 0.107 ---- = Not analyzed Primary <0.5 <0.5 <1.0 <0.5 < 0.5 < 0.5 < 0.5 < 0.5 0.I 728-MW6405 < = Not detected at indicated reporting limit 728MW64 < 0.097 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 < 0.0311 <0.157 05/05/99 < 0.214 < 0.103 < 0.302 <0.123 < 0.164 < 0.031 < 0.107 Primary 360 <0.5 1200 < 0.5 <0.5 < 0.5 0.39 220 140 728-MW6305 <0.0311 728MW63 < 0.0311 < 0.0311 05/05/99 < 0:302 <0.097 < 0.0311 < 0.0311 < 0.0311 < 0.157 < 0.103 < 0.123 < 0.214 < 0.107 < 0.164 < 0.031 Primary 1400 ₹0.5 <0.5 <0.5 < 0.5 1900 250 0.47 330 RESULT TYPE SAMPLE ID DATE Values represent total concentrations unless noted SITE (Units in ug/l) Fluoranthene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Anthracene Benzo(ghi)penylene I,4-Dichlorobenzene Benzo(b)fluoranthene 1,2-Dichlorobenzene Benzo(k)fluoranthene 1,3-Dichlorobenzene Benzo(a)anthracene Benzo(a)pyrene Xylene (total) Acenaphthene Phenanthrene Acenaphthylene CONSTITUENT Chlorobenzene Ethylbenzene Chrysene Naphthalene Foluene Fluorene Benzene Pyrene

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RESULT IS ESTIMATED.

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| | | ×0.0029 ×0.0029 | |
| | | <0.15.J | |
| Acenaphthylene Anthracene | <0.15 ≪0.15 | <0.15 <0.15 | |
| Benzo(a) anthracene Benzo(a) pyrene | 0.37 J 0.76 J | 0.18 J 037 J | |
| Benzo(b)fluoranthene Benzo(ghi)perviene | | 0.34 J 0.47 J | |
| Benzo(k)fiuoranthene Chrisena | | | |
| 16 | | | |
| | 10 | 0./2.J <0.15 | |
| Indeno(1,2,3-cd)pyrene Naohthalene | 0.44 4.4.J | 021 2.2 J | |
| 8 | | 0.21 J | |
| | | | |
| Diesel Range Organics Gasoline Range Organics | <10 <0.29 | <10 0.32 | |
| | | | |
| Values represent total concentrations unless noted <=Not dett For RCL 8000AJASI | < = Not detected at indicated reporting limit | oorting limit=Not analyzed 0.0009 | |

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| . 🔪 | Reinstructured by: / / DeterTure: Received by: / / / (Signatured) (Sign | DeterTime: K.J. GO O' IC' | | Cooter Temperature | (درزیه) |
| 八糸 | the states | 27-10-1-1-1-1- | ۰ لــ) | The CAL | NS of Cale |
|] | Trio Rlank Site I. D. Dov mother list from | | (H) | HCLVOC | |
| | Alreal to. Fall PX | CALF & EDOY, INC. X0 Colony Square, Suite | 2 (S (S) | HAND/MEINES HSO/ OTHER | |
| | s 8766831673 |) 872-3161 | | STORED/SHIPPED IN ICE Y/N | N ICE Y.V. |
| | | | | | |





| s/METHODS | ж | | | 105m61-5m11- | | | | | | Coolar Yamparture: 5'L E. Kup P. J. Ander 3'C. | STANDARD PRESERVATION (Y): | HCL/VOC, HAND, METALS H_SOL/ OTHER OTHER STORED/S J (N ICE Y/N |
|--------------|--|---|--------------------|----------------|------------------|----------------|-----------|------|--|---|----------------------------|--|
| | | 0N bad155M | 72 | A N | 2 | 2 | | | | (1:30 Ta | . L | £290 |
| RECORD | ASS IT 1072473 PY 8 = 517 TURE: | DEFTH NO. OF PRESERV CLUAR (FT) CONTS (YAY (FLEID (YAY) | 22 | 74 | 2 | 2 | | | | Date/Time: | yeller march if the nd | end Results to: Christine Hetunger c/o METCALF & EDOY, INC. 201 Peachtree St., N.E., 400 Colory Square, Suite 1101 (anta, Georgia 30361 (404) BB1-B010, FAX (404) B72-3161 |
| CUSTODY - | ASS ORDER NO. SAMPLE EVENT: PROGRAM TYPE: SAMPLER(S) SIGNATURE: | | 1041 HON XZT | 129 Mindo Sull | | 729MW66 PD11 / | | | | Received by: | alls 5/3/57 Eng | Send Results to: Christine Hettinge 201 Peachtree S clanta, Georgia (404) 881-8010, |
| CHAIN - OF - | HUNDER LTM BIGHEST MST MATHENERARYCANK WANNENERARYCANK | | OWM & ZTZ ZOOWH-BT | <u>н у/к</u> 3 | 728-Mulelos 728, | 728-4W805 729. | | | | Duta/Time: |) Sapler | AIRBILL CO. |
| | | The Burner | 199 1345 W 728-) | 524 11 WY by | 100 | 14 165 W 728 | · · · · · | | | Reinquiabad by: (Signa ura) | RAMITER CORLER #5(1164) | (|

00014



Co-ler #1 (ASI 1727)

| Number of Coolers: IIMS # 107713 Date Received: S7/5/77 Project: Hank LTM, Power # 019457 Use other side of this form to note details concerning check in problems A. Preliminary Examination Phase: Date cooler was opened: 5/6/19 by (print): TALMM. (sign) Fallers. 1. Did cooler come with a shipping slip (airbill, etc.)? (a) No 1. Did cooler come with a shipping slip (airbill, etc.)? (a) No 1. Were custody eeals on outside of cooler? (a) No 1. Were custody eeals on outside of cooler? (a) No 2. Were custody eeals on outside of cooler? (a) No 3. Were custody aeals unbroken and intact at the date and time of arrival? (a) No 4. Did you screen samples for radioactivity udng a Geiger counter? (b) No 5. Were custody papers filled out properly (ink, signed, etc.)? (b) No 6. Were custody papers in the appropriate place? (c) No 7. Did you sign custody papers in the appropriate place? (c) No 8. Was project identifiable from custody papers? | | Cooler Receipt Form | 1.1 | |
|---|----------|---|----------|-----------|
| Project: Hark LTM., Payed # 019927 Use other side of this form to note details concerning check-in problems A. Preliminary Examination Phase: Date cooler was opened: 5/1/29 by (print): Intervention Phase: Date cooler was opened: 5/1/29 by (print): Intervention Phase: Date cooler was opened: 5/1/29 by (print): Intervention Phase: Date cooler was opened: 5/1/29 by (print): Intervention Phase: Date cooler was opened: 5/1/29 by (print): Intervention Phase: Date cooler was opened: 5/1/29 cooler come with a shipping slip (airbill, etc.)? If YES, then enter carrier name and airbill number here: Faller # 374633/673 1 Were custody seals on outside of cooler? If YES, then enter carrier name and airbill number here: Faller # 374633/673 2 Were custody seals unbroken and intact at the date and time of arrival? If YES, not fall source of cooler? 4 Did you sign custody papers filled out properly (ink, signed, etc.)? If Yes No 5 Were custody papers filled out properly (ink, signed, etc.)? If yes No 6 Were custody papers filled out properly (ink, signed, etc.)? If yes No 7 Did you sign cus | | Date Received: | _5/1/2 | 1 |
| Use other side of this form to note details concerning Check in problems A. Preliminary Examination Phase: Date cooler was opened: | • | 1 1. 17m Prever # 019937 | | |
| A Preliminary Examination Phase: Date cooler was opened: 5/6/17 by (print): 6/6/6/9/6/9/6/9/6/9/6/9/6/9/6/9/6/9/6/9 | Projecti | The other side of this form to note details concerning check-in problems | | |
| by (print): ACLAPM (sign) Control See No 1. Did cooler come with a shipping slip (airbill, etc.)? If YES, then enter carrier name and airbill number here: Falter # 8746693/673 2. Were custody seals on outside of cooler? If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and airbill number here: If YES, then enter carrier name and intact at the date and time of arrival? If YES, No 4. Did you serve namples for radioactivity using a Geiger counter? If See No 5. Were custody papers sealed in a plastic bag & taped inside to the lid? Yes If See 6. Were custody papers in the appropriate place? If See No 7. Did you sign custody papers? If See No 8. Was project identifiable from custody papers?< | | Duliningry Examination Phase: Date cooler was opened: 5/6/99 | | · |
| by (nm) | Α. | (sign) | <u> </u> | <u></u> . |
| If YES, then enter carrier name and airbill number here: Parce of the property file 2. Were custody seals on outside of cooler? How many & where: 2 "field" seal date: No Dade, seal name: M HE not Signed 3. Were custody seals unbroken and intact at the date and time of arrival? Tess No 4. Did you screen samples for radioactivity using a Geiger counter? Tess No 5. Were custody papers sealed in a plastic bag & taped inside to the lid? Yes Tess No 6. Were custody papers filled out properly (ink, signed, etc.)? Tess No 7. Did you sign custody papers in the appropriate place? Tess No 8. Was project identifiable from custody papers? Tess No 9. If required, was enough ice used? Type of fce: Daged Tess No 9. If required, was enough ice used? Type of fce: Daged Tess No 10. Have designated person initial here to acknowledge receipt of cooler: Match the fill Tess No 11. Describe type of packing in cooler: baged in: Staff Staff No 12. Were al | | by (pandy | | No |
| Were custody seals on outside of cooler? How many & where: | ۶. | to ves then gater carrier name and airbill number here:Fell 5c # 87668 | · | |
| How many & where: Image: Seal date: No 3. Were custody seals unbroken and intact at the date and time of arrival? Tes No 4. Did you sereen samples for radioactivity using a Geiger counter? Tes 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.)? Tes No 7. Did you sign custody papers in the appropriate place? Tes No 8. Was project identifiable from custody papers? Tes No 9. If required, was enough ice used? Type of fice: Dagsd Seal No 10. Have designated person initial here to acknowledge receipt of ucoler. Clare? Seal No 11. Describe type of packing in cooler: Seag | - | We austody stals on outside of cooler? | | . 0 |
| 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 9. If required, was enough ice used? Type of Ice: Daysed Yes No 9. If required, was enough ice used? Yes Yes No 10. Have designated person initial here to acknowledge receipt of cooler (date): S/L/47 10. Have designated person initial here to acknowledge receipt of cooler Yes No 11. Describe type of packing in cooler: S/Z/177 May No 12. Were all bottles sealed in separate plastic bags? Yes No 13. Did all bottle labels complete (ID, date, time, signature, preservative, etc.)? Yes No 15. Did al | 2. | | MIEM | of signal |
| A. Did you screen samples for radioactivity using a Geiger counter? Ware custody papers scaled in a plastic bag & taped inside to the lid? Ware custody papers filled out properly (ink, signed, etc.)? Were custody papers filled out properly (ink, signed, etc.)? To Did you sign custody papers in the appropriate place? Was project identifiable from custody papers? If required, was enough ice used? Type of Ice: bagsed Have designated person initial here to acknowledge receipt of cooler. the start of the | | How many a where | Yes | No |
| 5. Were custody papers scaled in a plastic bag & taped inside to the lid? 6. Were custody papers filled out properly (ink, signed, etc.)? 7. Did you sign custody papers in the appropriate place? 8. Was project identifiable from custody papers? 16 YES, enter project name at the top of this form. 9. If required, was enough jee used? Type of Ice: bagsed (date): 5/c/49 10. Have designated person initial here to acknowledge receipt of cooler. 2000 (date): 5/c/49 10. Have designated person initial here to acknowledge receipt of cooler. 2000 (date): 5/c/49 11. Describe type of packing in cooler: (sign) 12. Were all bottles sealed in separate plastic bags? 13. Did all bottle samples unbroken and were labels in good condition? 14. Were all bottle labels agree with custody papers? 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? 19. Was a sufficient amount of sample sent for the tests indicated? | | Were custous sense the radioactivity using a Geiger counter? | Tes | |
| 6. Were custody papers filled out properly (ink, signed, etc.)? 7. Did you sign custody papers in the appropriate place? 8. Was project identifiable from custody papers? 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? Type of fice: bagsed 9. If required, was enough ice used? 9. If required, was enough ice used for the tests indicated? 9. Was a sufficient amount of sample sent for the tests indicated? 9. Was a sufficient amount of sample sent for the tests indicated? | | Did you server samples to the din a plastic bag & taped inside to the lid? | Yes | |
| 7. Did you sign custody papers in the appropriate place? 8. Was project identifiable from custody papers? 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. If required, was enough ice used? Type of fice: <u>bagsed</u> 9. Ing-in Phase: Date samples were logged-in: <u>5/7/77</u> 9. Log-in Phase: Date samples were logged-in: <u>5/7/77</u> 9. Log-in Phase: Date samples were logged-in: <u>5/7/77</u> 9. Log-in Phase: Date samples were logged-in: <u>5/7/77</u> 9. Were all bottles scaled in separate plastic bags? 11. Describe type of packing in cooler: <u>bagsed</u> is good condition? 12. Were all bottles arrive unbroken and were labels in good condition? 13. Did all bottle scomplete (ID, date, time, signature, preservative, etc.)? 14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? 19. Was a sufficient amount of sample sent for the tests indicated? | | Were custody papers filled out properly (ink, signed, etc.)? | (Yes | No |
| 8. Was project identifiable from custody papers? If YES, enter project name at the top of this form. 9. If required, was enough ice used? Type of Ice: brassed (date): 5/c/19 10. Have designated person initial here to acknowledge receipt of cooler. June (date): 5/c/19 B. Log-in Phase: Date samples were logged-in: 5/1/19 Mere all bottles arrive unbroken and were labels in good condition? Mere all bottle labels complete (ID, date, time, signature, preservative, etc.)? Mo Mere correct containers used for the tests indicated? Mo Mere correct preservatives added to samples? Mo Mere correct preservatives added to samples? Mo Mas a sufficient amount of sample sent for the tests indicated? | | Were clistody papers in the appropriate place? | Ces | No |
| If YES, enter project name at the top of this form. If required, was enough ice used? Type of Ice: Drgsad Tes No 9. If required, was enough ice used? Type of Ice: Drgsad Tes No 10. Have designated person initial here to acknowledge receipt of cooler: (date): 5/c/frg 10. Have designated person initial here to acknowledge receipt of cooler: (date): 5/c/frg 10. Log-in Phase: Date samples were logged-in: 5/z/rg (date): 5/c/frg 11. Describe type of packing in cooler: based in the base base? Yes No 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 preservatives added to samples? Yes No 17. Were correct preservatives added to samples? Yes No 18. Was a aufficient amount of sample sent for the tests indicated? | | Did you sign custody papers? | (Tes) | No |
| 9. If required, was enough ice used? Type of Ice: Dagsed (date): S/L/17 10. Have designated person initial here to acknowledge receipt of cooler: (date): S/L/17 10. Log-in Phase: Date samples were logged-in: S/1/17 11. Describe type of packing in cooler: (sign) 12. Were all bottles scaled in separate plastic bags? 13. Did all bottles arrive unbroken and were labels in good condition? 14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? | 8. | W_{23} project identifiable from $y = 1$ the top of this form. | | • |
| Have designated person initial here to acknowledge receipt of cooler. <u>Market (date)</u>. <u>Drefet</u> Log-in Phase: Date samples were logged-in: <u>5</u>/7/17 by (print): <u>brack for (sign)</u> (sign) Describe type of packing in cooler: <u>brack information for the tests indicated?</u> Yes No Were all bottle labels agree with custody papers? Were correct preservatives added to samples? Were all ficient amount of sample sent for the tests indicated? Was a sufficient amount of sample sent for the tests indicated? | | If YES, enter project mind as the of the bagsed | (inters | No |
| B. Log-in Phase: Date samples were logged-in: <u>S</u> 7179 by (print): <u>Describe type of packing in cooler</u>. <u>(sign)</u> <u>(sign)</u> <u>(sign)</u> 11. Describe type of packing in cooler: <u>based in backle wrap</u> 12. Were all bottles sealed in separate plastic bags? 13. Did all bottles arrive unbroken and were labels in good condition? 14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? | | It required, was chough for the to acknowledge receipt of cooler. (date |): 5/4 | 17 |
| by (print): Describe type of packing in cooler: (sign) (backlewrap) 11. Describe type of packing in cooler: backlewrap) 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 | | Have designated person many were logged-in: 5/2/17 /// | I de | · . |
| 11. Describe type of packing in cooler: based in packing in cooler: based in packing in cooler: Yes 12. Were all bottles scaled 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 | В. | Log-in Phase: Date samples for some (sign) | <u> </u> | |
| 12. Were all bottles sealed in separate plastic bags? 13. Did all bottles arrive unbroken and were labels in good condition? 14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? | | by (print): _ the price in cooler: based in the letter wap | | |
| Did all bottles arrive unbroken and were labels in good condition? Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? Did all bottle labels agree with custody papers? No Were correct containers used for the tests indicated? Were correct preservatives added to samples? Was a sufficient amount of sample sent for the tests indicated? No Were correct preservatives added to sample sent for the tests indicated? No | | Describe type of packing in course plastic bass? | Yes | |
| 14. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? | | Were all bottles scaled in septence plant were labels in good condition? | (es | No |
| 15. Did all bottle labels agree with custody papers? 16. Were correct containers used for the tests indicated? 17. Were correct preservatives added to samples? 18. Was a sufficient amount of sample sent for the tests indicated? | | Did all bottles arrive unbroken and white time, signature, preservative, etc.)? | Tes | 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 | | | Yes | No |
| 17.Were correct preservatives added to samples?TesNo18.Was a sufficient amount of sample sent for the tests indicated?No | | | Yes |) No |
| 18. Was a sufficient amount of sample sent for the tests indicated? No | | | es | No |
| 18. Was a autorient amount of sample sent for the tost material | | | (as |) No |
| (Yes) No | | | Yes |) No |
| 19. Were bubbles absent from VOA samples: If IVO, hist by camples details on back. Yes (No) | | Were bubbles absent from VOA samples: 11100, ist of chapter | | · · · · · |
| 20. Was the project manager called and status discussed? If TES, give details on one date | | | - | |

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|------------|---|-------------|------------|-------------|
| | Cooler Receipt Form LIMS #_107713 Date Received: | <u>5/7/</u> | 19 | |
| Number | of Coolers: | | · | · |
| Project: | Use other side of this form to note details concerning check-in problems | | | |
| | Use other side of this form to hote details that 5/7/99 | | | |
| Α. | Preliminary Examination Phase: Date cooler was opened: 5/7/99 | > | | |
| | by (print): W. Ryan Diver (sign) als Ry 10- | Yes | (No.) | |
| 4. | Did cooler come with a shipping slip (airbill, etc.)? | | | • |
| | If YES, then enter carrier name and airbill number here: | Yes | (No) | |
| Z . | Were custody seals on outside of cooler? How many & where:, seal date:, seal name: | | | . . |
| | How many & where:, seal one | Yes | No | N/A |
| 3. | Were custody seals unbroken and intact at the date and time of arrival? | (tes) | No | |
| 4. | Did you screen samples for radioactivity using a Geiger counter? | ·Yes | 5 | |
| 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.)? | Ves | No | |
| 7 | Did you sign custody papers in the appropriate place? | Yes | No | |
| 8. | Was project identifiable from custody papers? | \sim | | |
| | If YES, enter project name at the top of this form. | (Yes) | No | |
| 9. | If required, was enough ice used? Type of Ice: 57389 | 5 | 7hz | _ |
| 10. | Have designated person initial here to acknowledge receipt of observe | | , | |
| В. | Log-in Phase: Date samples were logged-in: 5/7/97 | | | |
| | by (print): by (. Mueler (sign) bla have) | | | |
| 11. | Describe type of packing in cooler: bassed ice babble wrap | Yes | No | 5 |
| 12. | Were all bottles sealed in separate plastic bags? | (Test | No 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 | | |
| 15. | Did all bottle labels agree with custody papers? | (Tes | ノー 、 No | |
| . 16. | Were correct containers used for the tests indicated? | - Qui | | |
| 17. | Were correct preservatives added to samples? | Yes | | |
| 18. | | Ye: | | |
| 19. | Were bubbles absent from VOA samples? If NO, list by sample# | | - | ~ ` |
| 20. | Was the project manager called and status discussed? If YES, give details on back. | Yes | Und | 1 |
| 21. | Who was called:by whomdate | | | |

AO/10/1322

전신학교에서

(ooler# 3 (ASI 1478)

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Cooler#4(ASI HOS)

| | Cooler Receipt Form | - la |
|------------------|---|-------------------|
| | of Coolers: LIMS # 107713 Date Received: | <u> >1+144</u> |
| | Lunter ITM Preject # 017425 | |
| Project:, | Use other side of this form to note details concerning check-in problems | |
| | Duliningry Examination Phase: Date cooler was opened: | |
| А. | by (print): W. RYAN DIVER (sign) Calor Ryund | |
| _ | Did cooler come with a shipping slip (airbill, etc.)? | Yes No. |
| ·1. | If YES, then enter carrier name and airbill number here: | |
| | Were custody seals on outside of cooler? | Yes No |
| 2. | | 114 |
| | How many & where:, seal date:, seal date: | Yes No NA |
| 3. | Did you screen samples for radioactivity úsing a Geiger counter? | (es) No |
| 4. | Were custody papers sealed in a plastic bag & taped inside to the lid? | Yes No |
| 5. | Were custody papers filled out properly (ink, signed, etc.)? | Yes No |
| б. | Did you sign custody papers in the appropriate place? | Ves No |
| 7. | Was project identifiable from custody papers? | Yes No |
| 8. | If YES, enter project name at the top of this form. | |
| | If YES, enter project name at the top of and the top of loe: | Yes No |
| 9. | If required, was enough the used. A provide the second of cooler: fun (date): Have designated person initial here to acknowledge receipt of cooler: fun (date): | 5/7/19 |
| 10. | Have designated person minut net to designed in: 5/7/97 Log-in Phase: Date samples were logged-in: 5/7/97 | |
| В, | by (print): 0 seph (. Mueller (sign) | |
| | by (print):O Sept1 bagsed ice / babble wrap | |
| 11. | | Yes 🔊 |
| 12. | Were all bottles scaled in separate plastic bags? | Yes No |
| 13. | Did all bottles arrive unbroken and were labels in good condition? Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? | No No |
| 14, | | Tes No |
| 15. | Did all bottle labels agree with custody papers? | Ves No |
| 16 | Were correct containers used for the tests indicated? | Q No |
| 17. | Were correct preservatives added to samples? | Yes No |
| 18. | | Yes No NA |
| 19. | Were bubbles absent from VOA samples? If NO, list by sample! | |
| . ́. 20 . | Was the project manager called and status discussed? If YES, give details on back. | |
| 21. | Who was called:by whomdate | |

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| 5/10/1.995 | <u> </u> | | י שלים עם יוי לי יווערים ייי אוריניין ייי איזיי ייי איזיעע אורייניען אייייאי איירעעייע אייייי י | | 1 | |
|------------|-------------|------------------------------|---|-------------------------|----------------|---------------------------------------|
| | | | | cooler # 5(| V 21 11 | シ |
| • | | | | • | • | · · · |
| | | | | • | | |
| | | | Cooler Receipt Form | | ~ /2/99 | |
| | NT | of Coolers: | LIMS # 107713 | Date Received: | | |
| | | Lleinter / TM | 1, Project # 019457 | | | |
| | Project:_ | The other side of | of this form to note details concerning | check-in problems | | |
| | | Enemination P | hase: Date cooler was opened: | 5/7/99 | | · · · · · · · · · · · · · · · · · · · |
| | А. | Prehminary Examination |) Divéte (sign) (1) | h Ry b | | |
| | | Did cooler come with a shi | inoing slip (alrbill, etc.)? | 1 | Yes (| No. |
| | 1. | Did cooler come with a sin | name and airbill number here: | - | <u>.</u> | |
| | | If YES, then enter carrier n | | | Yes (| No |
| | 2. | Were custody seals on out | side of coorer | , seal name: | | |
| | | How many & where: | | urival? | Yes | No N |
| | 3. , | Were custody seals unbrok | ten and intact at the date and time of a | 4 | (es) | No |
| | 4, | Did you screen samples fo | or radioactivity using a Geiger counter | e lid? | Yes | (No) |
| | 5. | Were custody papers seale | ed in a plastic bag & taped inside to th | | Yes | No |
| | 6. | Were custody papers fille | d out properly (ink, signed, etc.)? | | (Tes) | No |
| | 7. | Did you sign custody pape | ers in the appropriate place? | | (Yes) | No |
| | 8, | Was project identifiable f | rom custody papers? | · · · | | • |
| | | If YES, enter project nam | ie at the top of this form. | | Yes | No |
| | 9. | If required, was enough in | ce used? Type of Ice: | coaler: Aun (date): | 5/7 | ha |
| | 10. | How designated person i | initial here to acknowledge receipt of | cooler: (baller. | | |
| • | В, | t an in Phase. Date same | ales were logged in: 5/TINT | I Selvale | <u>م</u> | |
| | | by (print): | h (, mueller (sigh) | muc II- | | |
| | 11. | Describe type of packing | in cooler: bagged ref be | ubble wrap | | No |
| | 12. | Were all bottles sealed ir | n separate plastic bags? | • | Yes | |
| ÷ | 13. | Did all bottles arrive unb | proken and were labels in good conditi | ion? | (YES) | No |
| | 14. | Were all bottle labels co | mplete (ID, date, time, signature, pres | ervative, etc.)? | Est Ces | No |
| | 14. | Did all bottle labels agre | | | Cres / | No |
| | · 16. | Were correct containers | used for the tests indicated? | | (Co) | No |
| | | Were correct preservativ | | | 40 | No |
| | 17. | Was a sufficient amount | t of sample sent for the tests indicated | ? | (G) | No |
| | 18. | Was hubbles absent fro | om VOA samples? If NO, list by sam | ple# | Yes | No V |
| | 19. | Were unputes absolution | er called and status discussed? If YES | , give details on back. | Yes | No |
| | 20, | | by whom | date | | |
| | 21. | Who was called: | | | | |

Contraction of the
coder # 9(1683)

| | Cooler Receipt Form | 11 | | |
|----------|--|----------|---------------------------|-----------|
| Number | of Coolers: LIMS # 107713 Date Received: | 5/7/ | 19 | |
| Project: | 1 1 1 1 1 1 1 1 1 1 | | | |
| | Use other side of this form to note details concerning check-in problems | | | |
| А. | Preliminary Examination Phase: Date cooler was opened: 5/7/99 | | | |
| | by (print): W. Ryan Diver (sign) an Ry 1 | <u>ر</u> | <u> </u> | |
| i. | Did cooler come with a shipping slip (airbill, etc.)? | Yes | $\mathbb{N}_{\mathbb{O}}$ | |
| | If YES, then enter carrier name and airbill number here: | | ~ | |
| 2. | Were custody seals on outside of cooler? | Yes | (N₀) | |
| | How many & where:, seal date:, seal date:, seal name: | | | . 1 1 4 |
| 3, | Were custody seals unbroken and intact at the date and time of arrival? | Yes | No | NA |
| 4. | Did you screen samples for radioactivity using a Geiger counter? | (les) | No | |
| 5, | Were custody papers sealed in a plastic bag & taped inside to the lid? | Yes | Ø | |
| 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. | <u> </u> | | |
| 9. | If required, was enough ice used? Type of Ice: | (Yes) | No | |
| 10. | Have designated person initial here to acknowledge receipt of cooler: (date): | 7 | -119 | • |
| B. | tor in Pharm: Date sumples were logged-in: 5/7/92 | | | |
| | by (print): 0 seph (. Mueller (sign) | <u></u> | | |
| 11. | Describe type of packing in cooler: bassed ice / babble wrap | • | | |
| 12. | Were all bottles sealed in separate plastic bags? | Yes | No | |
| 13. | Did all bottles arrive unbroken and were labels in good condition? | (es) | No | |
| 14. | Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? | Tes | No | |
| 15, | Did all bottle labels agree with custody papers? | (Yes) | No | |
| . 16. | Were correct containers used for the tests indicated? | (Tes) | No | tari A |
| 17. | Were correct preservatives added to samples? | 40 | No | |
| 18. | | A | No | 174 |
| 19. | Were bubbles absent from VOA samples? If NO, list by sample# | Yes | No | NA |
| 20. | Was the project manager called and status discussed? If YES, give details on back. | Yes | (No) | |
| 21. | Who was called:by whomdate | | · | |

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| BAUE |
|---------------|
| |
| Metcal & Eddy |

| FIELD LOG GROUNDWATE | BOOK SAMPLII R MONITORING | NG DATA: WELL WORK SI | HEET | Metcair & Eddy |
|--------------------------------------|---------------------------------------|---------------------------|--------------------------------------|---------------------------------------|
| SAMPLED BY: | DH/WV | | WELL ID: | 728-MW/ |
| PROJECT NAME:_ | HAAF OF | r Sampling | LOCATION: | B.728 |
| Date sampled: | <u>HAAF Q1</u> 5/5/95 Time s | tart /520 End /5 | Well secured u | oon arrival? 🕅 N |
| - | d) inches + 12 | | 1. Standing water (gal | |
| 2. Depth of water fro | om T.O.C. <u> </u> | 04ft | 2. X <u>3</u> | |
| 3. Depth of well from | T.O.C. <u>/</u> 3 | 5.2ft | 3. = | gallons to purge |
| 4. Feet of standing w | vater (h) | <u>9.16</u> ft | 4. Purging Method _l | Vaterra Puny |
| CALCULATION: Standing water volum | $\pi = \pi [(d)^2 +$ | 4](h) | × • | |
| • | = 3.14 [(_0 | <u>.17_ft.)</u> 2 + 4] (| ft.) x 7.48 gal / ft. ³ = | gal |
| · · · | | pН | Conductivity | Temperature, (F) |
| 1.Well volume = | <u>[.</u> 5gal. | 5.65 | 232 | 21.0 0 |
| 2.Well volume = | 3_0gal. | - 64 | 240 | 20.6 |
| 3.Well volume = | 4.6 gal. | 5.90 | 239 | 20.7 |
| | gal. | | | · |
| 5.Well volume = | gal. | | | |
| Ground water sample | · . | · | • | |
| Sampling method - | D:sposable Tet | for Bailer | _ Field preservation | |
| Sample Description | | | | · · · · · · · · · · · · · · · · · · · |
| Odor: | Noe | | · | · |
| Color: | Lt: Br. | | | |
| Appearance | : Turbicl | | | |
| Weather Conditions | : Cloudy 151. | breeze | | |
| | , | | | · |
| Reading: | • | | ····· | |
| J | | ., | | |
| COMMENTS | · · · · · · · · · · · · · · · · · · · | <i>/ (</i> | · | · · · · · · · · · · · · · · · · · · · |
| | · · · · · · · · · · · · · · · · · · · | • • • • | | |
|] | | | , <u> </u> | |

|) SAMPLED BY: $DH / W.V.$ | WELL ID: | 728-MW6 |
|--|---------------------------------------|---|
| PROJECT NAME: HAAF atr Sampling | LOCATION: | B.728 |
| Date sampled: 5/5/99 Time start 1450 End 1546 | Well secured | upon arrival? 🕅 N |
| 1. Casing Diameter (d) 2 inches + 12 =0.17_ft | 1. Standing water (g | al.) =/.2 |
| 2. Depth of water from T.O.C. 5.95 ft | 2. X <u>3</u> | |
| 3. Depth of well from T.O.C. <u>12.9</u> ft | 3. = | gallons to purge |
| 4. Feet of standing water (h) <u>6.95</u> ft | 4. Purging Method | Waterra Puny |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | • • • | |
| $= 3.14 \left[\left(\underline{0.17} \text{ ft.} \right)^2 + 4 \right] \left(\underline{1} \right]$ | _ft.) x 7.48 gal / ft.3 = _ | gal |
| pH L2 CC | | Temperature, (F |
| 1.Well volume = 1.2 gal. 5.85 | 703 | 21.3 C |
| 2.Well volume = 2.4 gal. $5.9/$ | | 21.2 |
| 3.Well volume = 3.5 gal. -224 | | <u>.</u> |
|) 4.Well volume = gal | | (|
| 5.Well volume = gal | • <u>••••</u> •• | * ************************************ |
| Ground water sample | | · · · · · · · · · · · · · · · · · · · |
| Sampling method - Disposable Teflon Bailer | Field preservation - | |
| Sample Description | | |
| Odor: <u>Str. HC adur</u> | | |
| Color: br Appearance:furbid | | · |
| Appearance:furfic | · · · · · · · · · · · · · · · · · · · | |
| Weather Conditions: closely, sl. breeze | | |
| Air Monitoring Equipment used: OVA | · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
| Reading: Breathing zone: <u> <i>Øppm</i></u> | | · |
| In Well:ppm | | |
| COMMENTS: | | |
| M5/MBD | | |
| | - · · · · · · · · · | . (|

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| FIELD LOG | | Motcal & Eddy | | | |
|--------------------------------------|-----------|-------------------------|----------------------------|---------------------------------------|---------------------|
| GROUNDWATE | | | LL WORK S | | 728-MW11 |
| PROJECT NAME: | | | Sc. dine | _ | B.728 |
| Date sampled: 5/ | | | | | upon arrival? (Y) N |
| 1. Casing Diameter (| ir | nches + 12 = | <u>0.17 ft</u> | 1. Standing water (g | al.) = <u>0.9</u> |
| 2. Depth of water fro | m T.O.C | 6.74 | ft | 2. X <u> </u> | well volumes |
| 3. Depth of well from | T.O.C | 12.3 | ft | 3. = 2.8 | gallons to purge |
| 4. Feet of standing w | ater (h) | 5.56 | ft | 4. Purging Method | Waterra Pump |
| CALCULATION: Standing water volum | | t[(d) ² +4](| | <u>.</u> | |
| | = (| 3.14 [(<u>0,17</u> | _ft.) ² + 4] (| ft.) x 7.48 gal / ft.3 = _ | gal |
| | | | pH | Conductivity | · · · · · · |
| 1.Well volume = | | | \ | 56 | 20.4 |
| 2.Well volume = | | guii | 5.38 | 56 | 20.3 |
| 3.Well volume = | 2.8 | gal | DKH 4 | T 1.5 6AL | |
| 4.Well volume = | | gal | | · · · · · · · · · · · · · · · · · · · | |
| 5.Well volume = | | gal. | | | |
| Ground water sample | | · | | | |
| Sampling method - | D:sposal | he Teflon | Bailer | _ Field preservation - | · |
| Sample Description | | | | | |
| Odor: | | ar . | ····· | | |
| Color: | | | | | |
| Appearance: | Lov | 5.0 | | · | |
| Appearance. | . <u></u> | cest al bro | | | |
| | | | | | |
| | | | | | |
| Reading: | | | | | |
| COMMENTS: | | , , | | | |
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| GROUNDWATE | R MONITORING WELL WORK SH | EET |
|-----------------------|--|---|
| SAMPLED BY: | DH /W.V. | WELL ID: 728-MW60 |
| PROJECT NAME: | HAAF Atr Sampling | LOCATION: B.728 |
| Date sampled: 5/ | 5/99 Time start 1615 End 162 | 2.0 Well secured upon arrival? (YN) |
| 1. Casing Diameter (| d) 2^{-1} inches + 12 = 0.17 ft | 1. Standing water (gal.) = 0 - 9 |
| 2. Depth of water fro | m T.O.C. <u>7.44</u> tt | 2. X <u>3</u> well volumes |
| | T.O.C. <u>/3.0</u> ft | 3. = 2.8 gallons to purge |
| 4. Feet of standing w | vater (h) <u>5,56</u> ft | 4. Purging Method Waterra Pump |
| CALCULATION: | $=\pi[(d)^2 + 4](h)$ | |
| | $= 3.14 [(0.17 ft.)^2 + 4]($ | ft.) x 7.48 gal / ft.3 = gal |
| 1 Well volume = | 0.9 gal. 5.64 5.30 | Conductivity Temperature, (F) Z_{55} $\frac{90}{20}$ Z_{5} $\frac{90}{20}$ Z_{5} |
| | <u>1.8</u> gal. <u>5.84</u> | 319 20.9 |
| 3.Well volume = | 2.8 gal. <u>5.88</u> | 315 21.0 |
| \ | gal | (|
| 5.Well volume = | gal. | · · · · · · · · · · · · · · · · · · · |
| Ground water sampl | e | |
| Sampling method - | Disposable Teflon Bailer | Field preservation |
| Sample Description | | |
| Odor: | If C | |
| | Br | |
| Appearance | : Tarbid | |
| Weather Conditions | : Over cest, warm. | |
| Air Monitoring Equip | oment used: <u>OVA</u> | · |
| Reading: | Breathing zone: <u><i>Ppm</i></u> | |
| | In Well: | |
| COMMENTS: | · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
|) | | 7 |
| / <u></u> | ······································ | (|
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FIELD LOG BOOK SAMPLING DATA:

| FIELD LOG BOOK SAMPLING DATA: GROUNDWATER MONITORING WELL WOR | |
|--|-----------------------------------|
| SAMPLED BY: DH WV | WELL ID: <u>728 - MW61</u> |
| PROJECT NAME: HAAF Qtr Samplin | LOCATION: B.728 |
| Date sampled: 5/5/99 Time start 1600 End | |
| 1. Casing Diameter (d) 2 inches + 12 = 0.17 ft | 1. Standing water (gal.) =? |
| 2. Depth of water from T.O.C. 7,37 ft | 2. X <u>3</u> well volumes |
| 3. Depth of well from T.O.C. <u>13.0</u> ft | 3 = 2.8 gallons to purge |
| 4. Feet of standing water (h) <u>5.63</u> ft | 4. Purging Method Waterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| $= 3.14 [(0.17 ft.)^2 + 4]($ | ft.) x 7.48 gal / ft.3 = gal |
| рН | Conductivity Temperature, (F) |
| 1.Well volume = 0.9 gal. 5.30 | <u>90 - 20.4 č</u> |
| 2.Well volume = 1.8 gal. 5.44 | 106 20.4 |
| 3.Well volume = 2.8 gal. 5.53 | 114 20.4 |
| 4.Weli volume = gai. | |
| 5.Well volume = gal | · · · · · · · · · · · · · · · · · |
| Ground water sample | |
| Sampling method - Disposable Teflon Bailer | Field preservation |
| Sample Description | |
| Odor: <u>AC odov</u> | |
| Odor: <u>HC odov</u> Color: <u>Bv</u> | |
| Appearance: | |
| Weather Conditions: DVU(as f | |
| Air Monitoring Equipment used: <u>OVA</u> | |
| Reading: Breathing zone: <u><i>Ppm</i></u> | |
| in Well:ppm | ·. |
| COMMENTS: | |
| | |
|) | |
| | |
| | |



| FIELD LOG BOOK SAMPLING DA | |
|--|---|
| SAMPLED BY: DH (W.J. | WELL ID: 728-MWE |
| PROJECT NAME: HAAF Qtr Sa | |
| Date sampled: 5/5/99 Time start 164 | |
| 1. Casing Diameter (d) inches + 12 =0.17 | tt 1. Standing water (gal.) = / / / |
| 2. Depth of water from T.O.C. 7.50 | |
| 3. Depth of well from T.O.C | _ft 3. = 3.3 gallons to purg |
| 4. Feet of standing water (h) 6.5 | _ft 4. Purging Method Waterra Pu |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | |
| = 3.14 [(<u>0.17</u> ft.) ² | + 4] (ft.) x 7.48 gal / ft. ³ = gal |
| | pH Conductivity Temperature |
| 1.Well volume = / / gal | 492 76 20.3 |
| 2.Well volume = <u>2.2</u> gal. | 5.35 76 49.92 |
| 3.Well volume = $3, 3$ gal. | 5.37 75 20.1 |
| 4.Well volume = gal | |
| 5.Well volume =gal. | |
| Ground water sample | |
| Sampling method - D: sposable Teflon B. | a lev Field preservation |
| Sample Description | |
| Odor:HC | |
| Color:L4.Br- | · · · · |
| Appearance: | |
| Weather Conditions: | <u> </u> |
| Air Monitoring Equipment used: <u>OVA</u> | |
| Reading: Breathing zone: <u>Ppm</u> | |
| | |
| COMMENTS: | |
| | |
| | |
| | ······································ |



| FIELD LOG BOOK SAMPLING DATA: GROUNDWATER MONITORING WELL WORK SH | FFT | Metcall & Eddy |
|--|---------------------------------------|------------------------|
| SAMPLED BY: $DK / W.V.$ | | 728-MW64 |
| • | LOCATION:_ | B.728 |
| PROJECT NAME: <u>HAAF</u> Qtr Sampling Date sampled: $5/6/99$ Time start <u>1630</u> End <u>163</u> | 35 Well secured u | pon arrival? 🔿 N |
| 1. Casing Diameter (d) | 1. Standing water (gal | l.) =/ , / |
| 2. Depth of water from T.O.C. <u>6.12</u> tt | 2. X <u>3</u> | well volumes |
| 3. Depth of well from T.O.C. 13.0 ft | 3. = 3.4 | gallons to purge |
| 4. Feet of standing water (h) <u>6.88</u> ft | 4. Purging Method _ | Naterra Pump |
| CALCULATION: Standing water volume $=\pi[(d)^2 + 4](h)$ | | · · · · · |
| $= 3.14 [(0.17 ft.)^2 + 4]($ | ft.) x 7.48 gal / ft. ³ = | gal |
| pH 1.Well volume =/./gal4.446 | Conductivity | Temperature, (F) ZOS |
| 2.Well volume = 2.2 gal. $5.3/$ | 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:L+.BY | · · · · · · · · · · · · · · · · · · · | |
| Color: <u>LT. BY</u> Appearance: <u>Furbid</u> | · | |
| | | |
| Weather Conditions: <u>wurcast</u> , warm | | |
| Air Monitoring Equipment used: <u>OVA</u> | | |
| Reading: Breathing zone: <u><i>Pppm</i></u> | | |
| | | |
| COMMENTS: | | |
| | | |
| | | |
| | | |

| FIELD LOG I GROUNDWATE | BOOK SAMPL R MONITORING | | HEET | Meicai & Eddy |
|---|--|--------------------------------------|---|---|
|)SAMPLED BY: | / | | | 728-MW65 |
| | | Hr Sampling | 1 | B.728 |
| | | start 1995 End 17 | | upon arrival? 🔗 N |
| 1. Casing Diameter (c | | | 1. Standing water (ga | al.) = Ə |
| 2. Depth of water from | | | 2. X <u> </u> | |
| 3. Depth of well from | | | 3. = 2.9 | gallons to purge |
| 4. Feet of standing w | ater (h) | <u>5.79</u> ft | 4. Purging Method | Waterra Pump |
| CALCULATION: Standing water volum | $e = \pi[(d)^2]$ | +4](h) | | |
| | = 3.14 [(| <u>0.17</u> ft.) ² + 4] (| ft.) x 7.48 gal / ft. ³ = | gal |
| 1.Well volume = 2.Well volume = 3.Well volume = | <u> </u> | 5.77 | Conductivity 65 66 66 | Temperature, (F) 2/: 6 2/:-5 2/: 4 |
|) 4.Well volume = | _ | | | |
| 5.Well volume = | - | | | |
| Ground water sample | ······································ | | | |
| Sampling method | | flom Bailer | Field preservation - | |
| Sample Description | | · | · · · · · · · · · · · · · · · · · · · | |
| Odor: | None | | | |
| | | | | |
| Appearance: | sl. fursid | V | | |
| Weather Conditions: | mercast, | Warm | · · · · · · · · · · · · · · · · · · · | |
| Air Monitoring Equip | ment used: <u>OVA</u> | | · . | |
| Reading: | Breathing zone: _ | Ø ppm | | |
| | In Well: | ppm | · · · · · · · · · · · · · · · · · · · | <u> </u> |
| COMMENTS: | | | · _ · · · · · · · · · · · · · · · · · · | |
|) | | | | · |
| | | | | |

FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA



| Date5/5/99 | Location 728 - 5WE01 |
|---|--|
| Samplers Used <u>55 bow</u> | |
| Samplers Used | |
| · · · · · · · · · · · · · · · · · | |
| Drawing of sampling location (including location descr | iption as well as the presence of debris, surface sheens, |
| recent excavations, vegetation, etc.) | NO Sourple DE NO Sourple Inks dale Cincle Dury Inter |
| Weather | arks date Circle Only Note |
| | V* |
| Soil/sediment sampling parameters: 8260 8021 810 Description of sample Time of sample collection //20 OVA Backlings | |
| OVA Readings Depth of water (for sediment sampling) | |
| Decontamination (page number references) | k plan p A10-2 |
| Trowel | |
| Hand corer | |
| Hand auger | |
| Bowls | |
| Split spoons | |
| Photograph frame numbers NA | |
| Signature of field team personnel making data entry | D. Humphe |
| | |

FIELD LOGBOOK SOIL/SEDIMENT SAMPLING DATA



| Date 55999 Location 728 SWE03 |
|---|
| Samplers Used <u>33 bowl, 55 spoon</u> , encore |
| |
| |
| |
| Drawing of sampling location (including location description as well as the presence of debris, surface sheens, |
| recent excavations, vegetation, etc.) |
| Duncan st. |
| SWE03 |
| SWE03 / [A] [728 |
| |
| Weather Overcast, rainy, warm |
| |
| |
| Soil/sediment sampling parameters: 8260 (8021) 810(8310) 8270 GRO DRO PPM RCRA 8080 |
| Description of sample Lt. Br. Sand Lots for presences |
| Time of sample collection I 0 30 OVA Readings N A |
| 2// |
| Depth of water (for sediment sampling) 5'' |
| Decontamination (page number references) <u>Workplan pA10-z</u> |
| Spoons or spatulas |
| Trowel |
| Hand corer |
| Hand auger |
| Bowls |
| Split spoons |
| |
| Photograph frame numbers |
| Signature of field team personnel making data entry D. Hump |
| |

APPENDIX IV

SITE RANKING RESULTS

SITE RANKING FORM

| County: Chatham | ner Building 728 | Ranked by: <u>G. Rowell</u> | 00 |
|--|---|--|-----------|
| oodinty | Facility ID#:902 | 5035 and 9025049 Date Ranked: 6/3/ | 33 |
| | | | |
| | | B. Total Benzene - | |
| Maximum Concer | ntration found on the | Maximum Concentration found on the s | ite |
| site (Assume <0.660 n gasoline was stored or | | □ ≤ 0.005 mg/kg = 0 | |
| · | | □ > 0.00505 mg/kg = 1 | |
| □ ≤ 0.660 mg/kg | - | ■ >.05- 1 mg/kg* = 10 | |
| □ > 0.66 - 1 mg/ | - | □ > 1-10 mg/kg = 25 | |
| □ > 1 - 10 mg/kg | g = 25 = 50 | □ > 10 - 50 mg/kg = 40 | |
| ■ > 10 mg/kg | = 50 | □ > 50 mg/kg = 50 | |
| | | | |
| C. Depth to Groundw (bls = below land s | | | |
| ⊂ > 50' bis | = 1 | | |
| □ > 25'-50' bls | = 1 | | |
| □ > 10'-25' bis | - = 5 | | |
| . ■ ≤10 bis | = 10 | | |
| | | (<u>60</u>) x (C. <u>10</u>) = (D. <u>600</u>) | |
| GROUNDWATER CONT | | | |
| | | | |
| | aqueous-phase liquid guidelines for | F. Dissolved Benzene - Maximum Concentration at the site (One well must be located at the source the release) | e of |
| E. Free Product (Non hydrocarbons; See | aqueous-phase liquid guidelines for | Maximum Concentration at the site (One well must be located at the source the release) | e of |
| Free Product (Non hydrocarbons; See definition of "sheer No free product Sheen - 1/8" | aqueous-phase liquid guidelines for 1"). | Maximum Concentration at the site (One well must be located at the source the release) | e of |
| Free Product (Non-hydrocarbons; See definition of "sheer No free product Sheen - 1/8" > 1/8" - 6" | aqueous-phase liquid guidelines for 1"). = 0 = 250 = 500 | Maximum Concentration at the site (One well must be located at the source the release) □ ≤ 5 ug/L = 0 □ > 5 - 100 ug/L = 5 | e of |
| Free Product (Non-hydrocarbons; See definition of "sheer No free product Sheen - 1/8" > 1/8" - 6" > 6" - 1 ft | aqueous-phase liquid guidelines for n"). = 0 = 250 = 500 = 1,000 | Maximum Concentration at the site (One well must be located at the source the release) □ ≤ 5 ug/L = 0 □ > 5 - 100 ug/L = 5 | e of |
| Free Product (Non-hydrocarbons; See definition of "sheer No free product Sheen - 1/8" > 1/8" - 6" > 6" - 1 ft For every additior | aqueous-phase liquid guidelines for n"). = 0 = 250 = 500 = 1,000 mal inch, add another | Maximum Concentration at the site (One well must be located at the source the release) $\Box \leq 5 \text{ ug/L} = 0$ $\Box > 5 - 100 \text{ ug/L} = 5$ $\Box > 100 - 1,000 \text{ ug/L} = 50$ | ə of = |
| Free Product (Non-hydrocarbons; See definition of "sheer No free product Sheen - 1/8" > 1/8" - 6" > 6" - 1 ft | aqueous-phase liquid guidelines for n"). = 0 = 250 = 500 = 1,000 mal inch, add another | Maximum Concentration at the site (One well must be located at the source the release) □ ≤ 5 ug/L = 0 □ > 5 - 100 ug/L = 5 □ > 100- 1,000 ug/L = 50 ■ > 1,000-10,000 ug/L | ə of = |
| Free Product (Non-hydrocarbons; See definition of "sheer No free product Sheen - 1/8" > 1/8" - 6" > 6" - 1 ft For every addition 100 points = 1.000 | aqueous-phase liquid guidelines for n"). = 0 = 250 = 500 = 1,000 mal inch, add another | Maximum Concentration at the site (One well must be located at the source 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 | e of = |
| hydrocarbons; See definition of "sheer No free product Sheen - 1/8" > 1/8" - 6" > 6" - 1 ft For every addition | aqueous-phase liquid guidelines for n"). = 0 = 250 = 500 = 1,000 hal inch, add another 0+ (E. <u>1000</u>) + (F | Maximum Concentration at the site (One well must be located at the source the release) □ ≤ 5 ug/L = 0 □ > 5 - 100 ug/L = 5 □ > 100- 1,000 ug/L = 50 ■ > 1,000-10,000 ug/L = 50 □ > 10,000 ug/L = 250 100 = 10,000 ug/L □ > 10,000 ug/L = 250 | e of |

}

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.

| н. | Public Water Supply | I. Non-Public Water Supply | |
|-----------|---|--|-----------|
| | | | |
| J. | Distance from nearest Contaminant Plume boundary to downgradient Surface Waters OR UTILITY TRENCHES & VAULTS (a utility trencl | | basements |
| | may be omitted from ranking if its invert elevation is more than 5 feet above the water table. | $ \begin{array}{c cccc} \square & \text{Impacted} & = 500 \\ \square & \leq 500' & = 50 \\ \square & > 500' - 1,000' & = 5 \\ \blacksquare & > 1,000' \text{ or} & = 0 \end{array} $ | |
| | $\square Impacted = 500 \leq 500' = 50 \square > 500' - 1,000' = 5 \square > 1,000' = 1 $ | no free product | |
| Fill in | the blanks: $=(H._0] + (I._0] + (J._1)$ | <u>50</u>) + (K. <u>0</u>) = L. <u>50</u> | · . |
| | (G. <u>110</u> | 00) x (L. <u>50_</u>) = M. <u>55,000</u> | · · · · |
| | (M. <u> 55,00</u>) | 0) + (D. <u>_600</u>) = N. <u>_55,600</u> | |
| <u>P.</u> | SUSCEPTIBILITY AREA MULTIPLIER | | |
| | If site is located in a low Groundwater Polluti | on Susceptibility Area - 0.5 | |
| | All other sites = 1 | | |
| | | | |
| Q. | EXPLOSION HAZARD | | |
| Q. | | from this release, been detected in any subsurfa ;, crawl spaces, etc.)? | ace |
| Q. | EXPLOSION HAZARD Have any explosion vapors, possibly originating f | from this release, been detected in any subsurfa s, crawl spaces, etc.)? | ace |
| Q. | EXPLOSION HAZARD Have any explosion vapors, possibly originating t structure (e.g., utility trenches, basements, vaults | from this release, been detected in any subsurfa s, crawl spaces, etc.)? | ace |
| | EXPLOSION HAZARD Have any explosion vapors, possibly originating to structure (e.g., utility trenches, basements, vaults Yes = 200,000 No = 0 | from this release, been detected in any subsurfa s, crawl spaces, etc.)?) = (L. <u>55,600</u>) + (Q <u>0</u>) | ace |
| | EXPLOSION HAZARD Have any explosion vapors, possibly originating to structure (e.g., utility trenches, basements, vaults Yes = 200,000 No = 0 | s, crawl spaces, etc.)? | ace |

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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

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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 lightcolored 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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