

DECISION DOCUMENTS

USTs #257-261

GA EPD letter received w/ comments dated	July 29, 2009
FS letter sent to GA EPD dated	July 20, 2009
Corrective Action Plan Part-B dated	June 2009 (Missing)
Decision Document dated	March 23, 2001
FS letter sent to GA EPD dated	July 7, 2000
GA EPD letter received dated	May 31, 2000
FS letter sent to GA EPD dated	January 31, 2000
Corrective Action Plan Part-B dated	January 2000 (Missing)
FS letter sent to GA EPD in RTC dated	July 12, 1999
GA EPD letter received dated	June 11, 1999
FS letter sent to GA EPD dated	March 19, 1999
Corrective Action Plan Part-A UST #261 dated	March 1999
FS letter sent to GA EPD dated	March 19, 1999
Corrective Action Plan Part-A USTs #257-260 dated	March 1999



Georgia Department of Natural Resources

Environmental Protection Division
Underground Storage Tank Management Program
4244 International Parkway, Suite 104, Atlanta, Georgia 30354
Chris Clark, Commissioner
Carol A. Couch, Ph.D., Director
(404) 362-2687

July 29, 2009

Ms. Algeana Stevenson
U.S. Army/HQ 3d, Inf. Div (Mech)
Directorate of Public Works
1550 Frank Cochran Drive
Fort Stewart, Georgia 31314-4927

**SUBJECT: Corrective Action Plan (CAP)-Part B Review Comments:
AAFES Car Care Center
Building 430, USTs 257-261
Hero Road between Bundy Avenue and W. 15th Street
Fort Stewart, Liberty County, GA
Facility ID: 9089118*1&2**

Dear Ms. Stevenson:

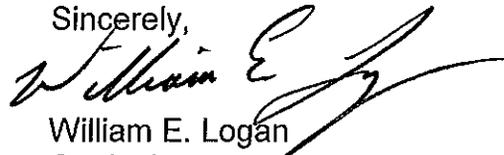
The Georgia Underground Storage Tank Management Program (USTMP) has received your consultant's letter, dated July 22, 2009, that forwarded a properly certified Revised CAP-Part B. The report was prepared by J2 Engineering, Inc.

We have conducted a technical review of the Revised CAP-Part B. The basis for this review is the Georgia Rules for Underground Storage Tank Management (GUST Rules, revised 1996). Our comments are outlined in the enclosure. Please amend the CAP-Part B to address these by **September 30, 2009**.

Unless one of the outlined EPD Comments requests otherwise, you are required to submit only your responses to these comments. Resubmittal of a complete CAP-Part B is not necessary.

If you have any questions, please contact me at (404) 362-4529.

Sincerely,



William E. Logan
Geologist
Corrective Action Unit II

WEL;

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Enclosure

cc with EPD comments: Tamara J. Onorato, P.G., J2 Engineering, Inc.
Lisa L. Lewis, GA EPD

File (CA): LIBERTY; 9089118

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EPD Review Comments

Corrective Action Plan (CAP)-Part B:
Building 430, USTs 257-261
Hero Road between Bundy Avenue and W. 15th Street
Fort Stewart, Liberty County, GA
Facility ID: 9089118*1&2

July 29, 2009

In reviewing the submitted Revised CAP-B the following were noted:

- 1) The UIC permit had expired and needs to be renewed. Please submit a renewed copy UIC permit.
- 2) EPD recommended during a site visit to use monitoring well MW76-32 or install additional injection well or wells be installed upgradient of MW76-21 (west side of the dispenser island) to address the possible source of release. It is our observation, that chemical oxidation has the ability to mobilize free product from the impacted subsurface soils. IF, free product is discovered EPD requests that a high vacuum event be conducted as soon as possible.
- 3) EPD requires a minimum of two years monitoring (1 year quarterly followed by 1 year of semi-annual monitoring). IF, free product is discovered during the monitoring period then an additional 1-year monitoring will be added on to the monitoring period. EPD will determine when site conditions are met and issue a No Further Action at that time.
- 4) EPD recommends that Table 1, Groundwater Level Data, Screened Interval (ft) be revised to reflect the screened interval and not the total length of the screen. Example (5.0 ft to 15.0 ft or 5-15).

If you have any question please feel free to contact me at 404.362.4529.





DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART / HUNTER ARMY AIRFIELD
1587 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314

REPLY TO
ATTENTION OF

JUL 20 2009

Office of the Directorate

CERTIFIED MAIL

1008 3230 00029207
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Georgia Environmental Protection Division
Underground Storage Tank Management Program
Attention: Mr. William Logan
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

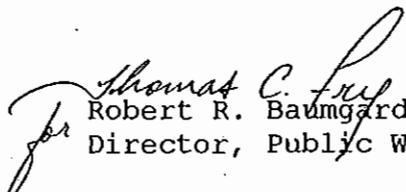
Dear Mr. Logan:

Fort Stewart is pleased to submit one copy of the Final Revised Corrective Action Plan Part B, Remedial Action and Groundwater Monitoring, At AAFES Car Care Center, Former Underground Storage Tank Installations 257-261, Ft. Stewart, Georgia, Facility Identification Number #9-089118 dated June 2009, for your review and approval.

Fort Stewart recommends that chemical oxidation be utilized to address the residual benzene contamination in the smear zone and the groundwater onsite. Four new monitoring wells will be installed around the injection area prior to the injection event. Subsequent the injection event, groundwater samples will be collected and analyzed for benzene, toluene, ethyl-benzene, xylene, and persulfate on thirty, sixty, and ninety day intervals. When benzene concentrations remain consistently below the site specific benzene alternate concentration limit, Fort Stewart will request the evaluation by Georgia Environmental Protection Division of granting a "No Further Action" status for this site.

Fort Stewart appreciates your consideration of these recommendations. If you have any questions or comments regarding the enclosed report, please contact Ms. Algeana Stevenson at (912) 315-5144 or Ms. Tressa Rutland, Directorate of Public Works, Prevention and Compliance Branch, at (912) 767-2010.

Sincerely,


Robert R. Baumgardt
Director, Public Works

Enclosure

COPY

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MAR 23 2001

MEMORANDUM FROM COMMANDER, 3d IN DIV (MECH) & FORT STEWART

MEMORANDUM FOR ARMY, AIR FORCE EXCHANGE SERVICES (ATTN: Rebecca Santee, Manager)

SUBJECT: Former Underground Storage Tanks Located at Bldg 430
(Fort Stewart, GA)

1. Purpose. To provide AAFES a copy of the Corrective Action Plan (CAP)- Part B for the former underground storage tanks (USTs) located at Building 430 (USTs 257-261).

2. Discussion.

a. Former USTs 257-260 were 10,000 gallon gasoline storage tanks that were removed in March 1993, and UST 261 was a waste oil tank removed in June 1996.

b. This site is extremely contaminated and requires remediation in accordance with State rules and regulations. Specifically, the enclosed report documents the extent of contamination (see below) and outlines the proposed corrective actions to be undertaken by this office to restore the site to "allowable" conditions.

(1) GROUNDWATER. The groundwater contamination at this site covers an area 320 feet long (northwest-southeast) and 240 feet wide (southwest-northeast), and is the largest petroleum related release at Fort Stewart. Benzene, which is the constituent in groundwater requiring remediation, is present at over 32,700 ug/L in the shallow aquifer (less than 15 feet below ground surface [bgs]) and at over 11,000 ug/L in the deeper aquifer (>35 feet bgs). The State approved remediation level for this site is 713 ug/L, and any concentration of benzene over 30,000 ug/L usually indicates the presence of free product in the groundwater.

(2) SOIL. The known soil contamination at this site covers an area 200 feet long (northwest-southeast) and 140 feet wide (southwest-northeast), and again is the largest petroleum related release at Fort Stewart. The concentrations of benzene, toluene, ethylbenzene, and xylenes in soil all exceed their respective remediation levels for this site. The maximum concentrations observed to date at the site, along with the State required remediation level, are summarized in the following table:



AFZP-PWV-E

SUBJECT: Former Underground Storage Tanks Located at Bldg 430
(Fort Stewart, GA)

Soil Contaminants at Bldg 430

Constituent	Maximum Concentration at Bldg 430 (mg/kg)	State approved Remediation Level* (mg/kg)
Benzene	267	0.073
Toluene	1700	24
Ethylbenzene	333	22
Total Xylenes	1740	1153

*These levels are above established Maximum Contaminant Levels. However, the state has approved these alternate levels after review of relative risk.

Thus, it is evident from the table, that the site is grossly contaminated with petroleum hydrocarbons.

c. The specifics of the proposed plan are outlined in Section III.C (pages 27 through 32) of the report, and include installation and operation of a soil vapor extraction system, an air sparging system, and groundwater extraction wells.

d. At this time, it is anticipated that the system(s) will be in operation a minimum of 24 months. At that time, site conditions will be re-evaluated to determine whether an additional 12 month treatment will be required.

e. Installation of the remedial system above grade is preferred in order to reduce capital costs and enable monitoring and/or maintenance requirements to be performed in accordance with State regulations. This will allow continued operation of the services located in Bldg 430; however, parking and facility entrances/exits may need to be rerouted.

f. It is estimated that the proposed remedial actions for this site will cost over \$750,000 if the system is installed above grade. However, costs associated with the remedial action technology and monitoring increase significantly when the system is installed below grade. Both methods (i.e., above or below grade) will support continued operation of this facility but may cause some inconveniences.



AFZP-PWV-E

SUBJECT: Former Underground Storage Tanks Located at Bldg 430
(Fort Stewart, GA)

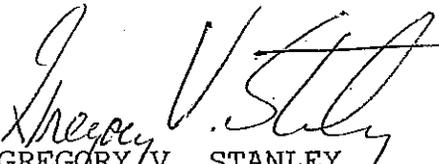
g. Contracted services currently "housed" under the former dispenser island canopy will need to be relocated or the contract(s) terminated during either installation of the remedial technology and/or throughout the remediation process dependent upon results of discussions with AAFES representatives.

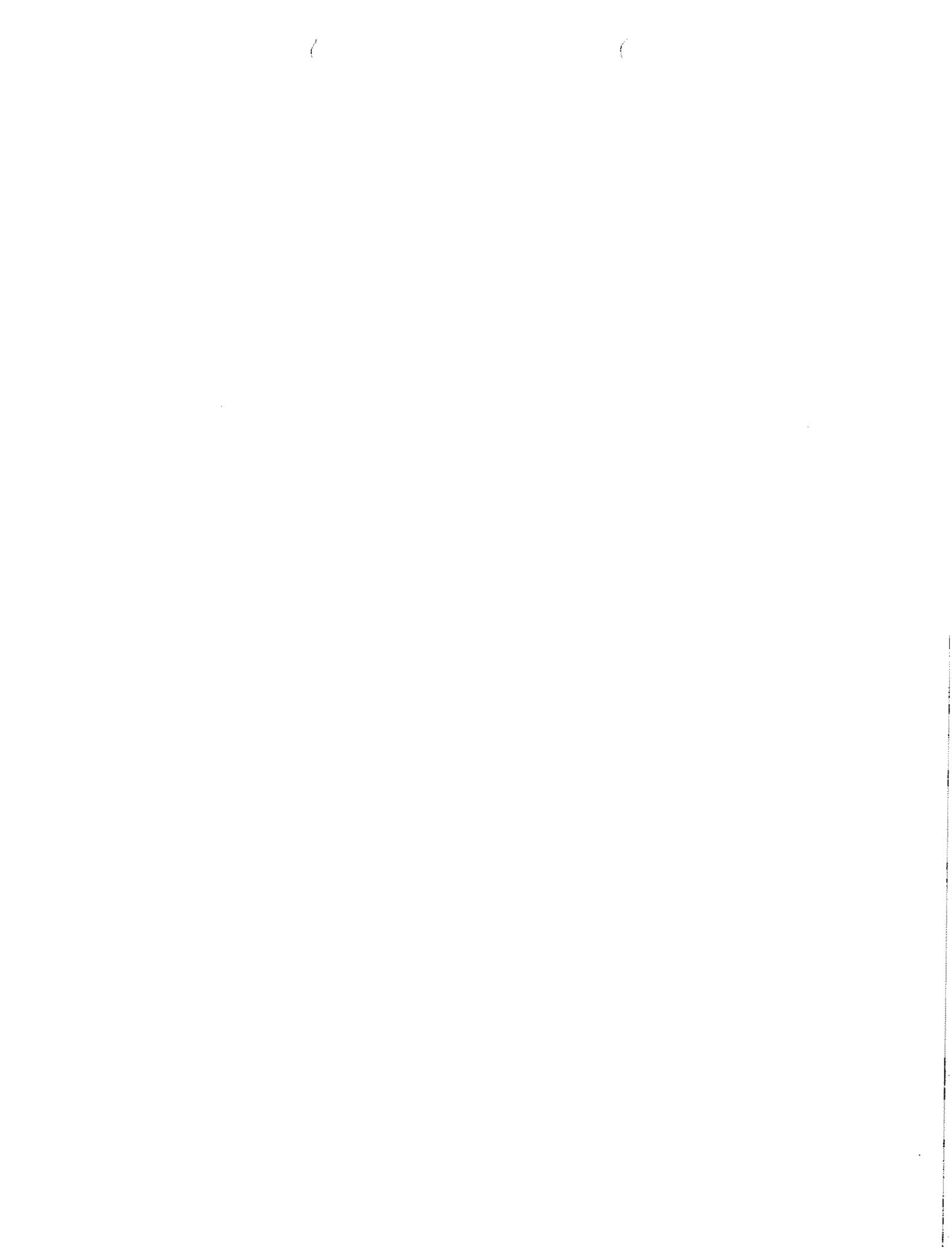
3. Recommendation. All parties involved with implementation of this remediation effort (i.e., AAFES personnel, Environmental Office, Savannah District COE, and contract personnel) meet to discuss options to minimize impact to the operations of the facility, while still achieving site remediation in the required timeframe and within the available funding limitations. Specifically, a meeting in early April is optimal, as the contract for this work must be awarded within the next few weeks to meet state mandated remediation timelines.

4. Point of Contact. For questions or concerns regarding this memorandum and/or the enclosed report, please contact Ms. Melanie Little at (405) 364-8461 or Ms. Tressa Rutland at (912) 767-7919, this directorate.

FOR THE COMMANDER:

Encl


GREGORY V. STANLEY
COL, EN
Director, Public Works





REPLY TO
ATTENTION OF

HEADQ.

DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) A
DIRECTORATE OF PUBLIC WORKS
1550 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4927

FORT STEWART

JUL 07 2000

Office of the Directorate

CERTIFIED MAIL

Georgia Department of Natural Resources
Underground Storage Tank Management Program
Attention: Mr. William Logan
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

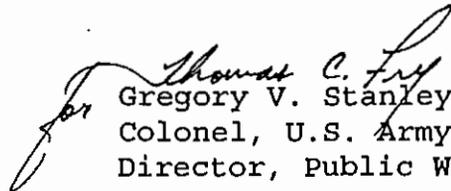
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Dear Mr. Logan:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's correspondence dated May 31, 2000 regarding the Corrective Action Plan-Part B submitted for Underground Storage Tanks (USTs) #257 through #261, Facility Identification Number 9-089118*1, Building 430, Fort Stewart, Georgia. As requested, an updated Milestone Schedule has been prepared for this site and is provided for your use and convenience.

If you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively.

Sincerely,


Gregory V. Stanley
Colonel, U.S. Army
Director, Public Works

Enclosure

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Georgia Department of Natural Resources

Environmental Protection Division
Underground Storage Tank Management Program
4244 International Parkway, Suite 104, Atlanta, Georgia 30354
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
(404)362-2687

May 31, 2000

Mr. Thomas C. Fry
Environmental Branch
Directorate of Public Works BLDG 1137
HQS 3D In DIV (Mech) and Fort Stewart
1550 Frank Cochran Drive
Fort Stewart, GA 31314-4927

SUBJECT: **Notice to Implement:**
Building 430, USTs 257-261 Site
Hero Road between Bundy Avenue and W. 15th Street
Fort Stewart, Liberty County, GA
Facility ID: 9089118*1

Dear Mr. Fry:

The Georgia Underground Storage Tank Management Program (USTMP) has received your letter, dated January 31, 2000, that forwarded a properly certified Corrective Action Plan (CAP) - Part B Report. The report was prepared by Science Applications International Corporation.

The technical proposal contained in the Corrective Action Plan (CAP) - Part B Report for further investigation, monitoring and/or remediation of the current release is hereby approved by the USTMP. As a result of your Corrective Action Plan (CAP) - Part B Report being technically approved, you are authorized to continue implementation of this plan.

Please submit an updated milestone schedule by July 5, 2000, listing specific dates, events and a timetable to complete the proposed activities. If you have any technical questions, please contact me at (404)362-2687.

Sincerely,



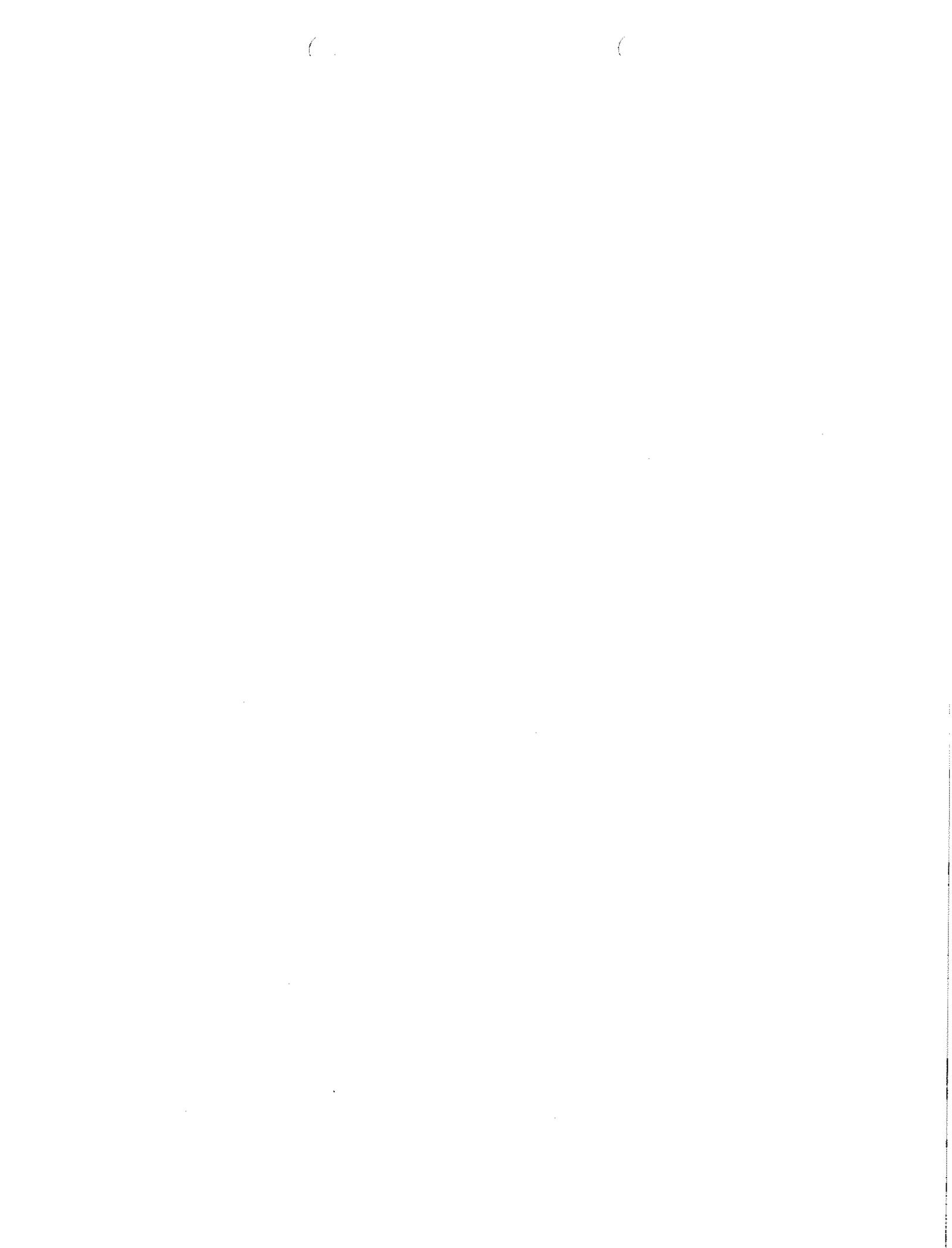
William E. Logan
Senior Geologist
Corrective Action Unit II

WEL;
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cc: Patricia A. Stoll, P.E., Science Applications International Corporation
Lisa Lewis, GA EPD
Larry Rogers, GA EPD Coastal District

File (CA): Liberty; 9089118

UST Compliance - A Key to a Cleaner Environment





DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1557 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4928

JAN 31 2000

REPLY TO
ATTENTION OF

Office of the Directorate

CERTIFIED MAIL

Georgia Department of Natural Resources
Underground Storage Tank Management Program
Attention: Mr. William Logan
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

2-297-020-716

Dear Mr. Logan:

Fort Stewart is pleased to submit the Corrective Action Plan (CAP)-Part B for Underground Storage Tanks (USTs) #257 through #261 formerly located near Building 430 on Fort Stewart, Georgia, Facility Identification Number 9-089118.

This site is located greater than 500 feet from a withdrawal point for a public water supply, and the area is considered to be of average or higher groundwater pollution susceptibility. Therefore, soil threshold levels (STLs) for this site were taken from Georgia Department of Natural Resources Environmental Protection Division (GA EPD), Chapter 391-3-15, Table A, Column 2. In addition, the In-Stream Water Quality Standards (IWQS) were used for comparison to groundwater analytical data.

Based on the information contained in the enclosed CAP-Part B and the site ranking of 251,000 (Appendix X), Fort Stewart recommends that active remediation of soil and groundwater at Facility Identification Number 9-089118 (Fort Stewart's USTs #257 through #261) be performed in accordance with Section III.C. We appreciate your consideration of this recommendation, and if you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-2010, respectively.

Sincerely,

Thomas C. Fry 01/31/00
Gregory V. Stanley
Colonel, U.S. Army
Director, Public Works

Enclosure





DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1557 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4928

REPLY TO
ATTENTION OF

JUL 12 1999

Office of the Directorate

CERTIFIED MAIL

Georgia Department of Natural Resources
Environmental Protection Division
Underground Storage Tank Management Program
Attention: Mr. William Logan, Environmental Specialist
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

Dear Mr. Logan:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's (GA EPD's) correspondence dated June 11, 1999 (Wallace to Fry), in reference to the Corrective Action Plan (CAP)-Part A submitted for Fort Stewart's former underground storage tank (UST) #261, Building 430, Facility Identification Number 9-089118*1. As requested, an updated Milestone Schedule for implementation of the Site Investigation Plan (SIP) and submittal of the CAP-Part B is provided for your use and convenience. Please note, as indicated under the SIP, the CAP-Part B investigation will also include USTs# 257-260, also formerly located at this facility (Facility Identification Number 9-089118*2).

If you have any questions or comments regarding this matter, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919/2010, respectively.

Sincerely,

For Thomas C. Fry 07/12/99
Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosure



MILESTONE SCHEDULE
(July 1999)
UST #261, FACILITY ID. NO. 9-089118*1

PROJECTED DATE	EVENT
April 1999	Conducted CAP-Part B field work.
June 1999	Contractor received data from laboratory and conducted data validation.
July 1999	Contractor prepares draft CAP-Part B report.
August 1999	Fort Stewart conducts internal review of the draft CAP-Part B.
September 1999	Contractor incorporates review comments into report and finalizes CAP-Part B.
October 1999	Installation submits final CAP-Part B to GA EPD, USTMP.

Note: The CAP-Part B for 9089118*2 (USTs 257-260) and 9089118*1 (UST 261) will be one report, as indicated in the respective CAP-Part A reports.



Georgia Department of Natural Resources

Environmental Protection Division
Underground Storage Tank Management Program
4244 International Parkway, Suite 104, Atlanta, Georgia 30354
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
(404)362-2687

June 11, 1999

Mr. Thomas C. Fry
Environmental Branch
U.S. Army/HQ 3d, Infantry Division (Mechanized)
DPW ENRD ENV. Br. (Fry)
1557 Frank Cochran Drive
Fort Stewart, GA 31314-4928

SUBJECT: Corrective Action Plan (CAP)-Part A
UST 261, Building 430
Hero Road Between Bundy Avenue and West 15th Street
Fort Stewart, GA; Liberty County
Facility ID: 9089118*1

note in database

Dear Mr. Fry:

This is to acknowledge your letter, dated March 19, 1999, that forwarded a properly certified CAP-Part A, for our review. The report was prepared by Science Applications International Corporation.

The CAP contained a Site Investigation Plan for contaminated media resulting from the referenced release at the subject location, are hereby approved by EPD. As a result of your CAP-A being technically approved, you are authorized to begin implementation of this plan, leading to the preparation of a CAP-Part B.

Please note that the original chain-of-custody forms and the original laboratory reports should be submitted in your future reports. Soils collected for laboratory analysis should either be preserved in the field or collected using En-Core samplers. Note also that the MCLs for toluene and ethylbenzene in your report were transposed in Table 3a, and that the cited information on Regional and Local Geology (Page X-5) was not the work of Metcalf & Eddy, 1996).

Please submit an updated milestone schedule, listing specific dates, events, and a time table to complete the proposed activities by July 12, 1999.

If you have any technical questions, please contact the undersigned at (404)362-2687.

Sincerely,

Ronald J. Wallace

Ronald J. Wallace
Senior Geologist
Corrective Action Unit II

RJW;
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cc: Patricia A. Stoll, P.E., Science Applications International Corp.
Lisa L. Lewis, GA EPD
File (CA): Liberty; 9089118



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DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1557 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4928

MAR 19 1999

REPLY TO
ATTENTION OF

Directorate of Public Works

CERTIFIED MAIL

Georgia Department of Natural Resources
Environmental Protection Division
Underground Storage Tank Management Program
Attention: Ms. AJ McAllister, Environmental Specialist
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

Dear Ms. McAllister:

Fort Stewart is pleased to submit the Corrective Action Plan (CAP)-Part A for Underground Storage Tank (UST) #261, formerly located at Building 430, Facility Identification Number 9089118, Fort Stewart, Georgia.

This site is located greater than 500 feet from a withdrawal point for a public water supply and the area is considered to be of average or higher groundwater pollution susceptibility. Therefore, soil threshold levels for this site were taken from Georgia Department of Natural Resources Environmental Protection Division (GA EPD), Chapter 391-3-15, Table A, Column 2, and the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) were used for comparison to groundwater analytical data.

The contract to perform the field work at UST #261 was awarded prior to publication of the May 1998 CAP-Part A Guidance document. Therefore, analytical methods utilized during the CAP-Part A investigation were the old SW846 methods, not the new methods outlined in the Guidance Document, Underground Storage Tank Release: Corrective Action Plan-Part A, May 1998. However, even though the CAP-Part A was considered "underway" when the guidance document was released, the new (May 1998) CAP-Part A form and guidance document were utilized in preparation of this report.

Ms. Melanie Little, this directorate, discussed the issue of the new guidance with Mr. Michael Coughlan, GA EPD, during a September 1998 visit to Fort Stewart. At that time, Fort Stewart was directed to mention this fact in the respective cover letter for each affected CAP-Part A and to reference the "notice" dated May 18, 1998 from GA EPD, USTMP stating, "those CAP-Part A's which are already under development may be completed using the November 1995 Guidance Document." Again, since the contract had been awarded with the costs for the old SW846 methods, the only aspect of the May 1998



guidance document which was not adhered to were the sampling procedures. I hope this does not cause an inconvenience to you in your review.

Benzene, toluene, ethylbenzene, and xylenes (BTEX) contamination was identified in groundwater, exceeding their respective MCLs. In addition, the vertical and horizontal extent of groundwater contamination was not determined during the CAP-Part A investigation. Therefore, Fort Stewart recommends that a CAP-Part B be prepared for the site, as outlined in Section II.D.8: *Conclusions and Recommendations*.

Fort Stewart, as noted under *Site Investigation Plan Section IV.A.1* of the enclosed CAP-Part A, recommends combining the CAP-Part B investigation for this site and USTs #257 through #260 (Facility Identification Number 0890037). Although these former USTs are registered under separate facility identification numbers, the sites are located at the same facility (Building 430) and are located less than 60 feet from each other at the closest point. Fort Stewart proposes to submit one CAP-Part B Report which will address both facilities. For tracking purposes, two copies of the report will be submitted under each of the two facility identification numbers. A recommended Milestone Schedule is enclosed, and will be initiated by Fort Stewart unless otherwise directed by the Underground Storage Tank Management Program.

Finally, Fort Stewart recently submitted a Free Product Notification for Facility Identification Number 0890037. This was associated with the pipeline for USTs #257 through #260. However, since this is at the same Car Care Facility, Building 430, as the former UST#261, it has been provided herein for informational purposes only.

If you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively.

Sincerely,

for Thomas C. Fry 03/19/99
Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosures



MILESTONE SCHEDULE

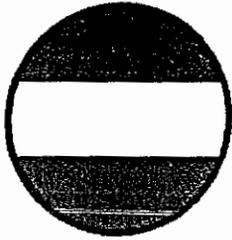
USTs #261, FACILITY ID. NO. 9089118

PROJECTED DATE*	EVENT
April 1999	Conduct CAP-Part B field work (NOTE: Facility Id. No. 0890037 and 9089118 will be combined for one CAP-Part B investigation and one CAP-Part B report since the sites are located less than 60 feet from each other at the closest point. However, two copies of the report will be submitted, one for each facility Id No.).
July 1999	Review Draft CAP-Part B.
October 1999	Fort Stewart submits one CAP-Part B for Facility Id. Nos. 0890037 <u>and</u> 9089118 to GA EPD, USTMP (two copies, one for each facility Id No.).

NOTE: * These dates are tentative and are based on a negotiated Contractor's schedule.



FINAL



FORSCOM

CORRECTIVE ACTION PLAN

Part A



3d Inf Div (Mech)

**Underground Storage Tank 261
Facility ID #9-089118
Building 430
Fort Stewart, Georgia**

Prepared for



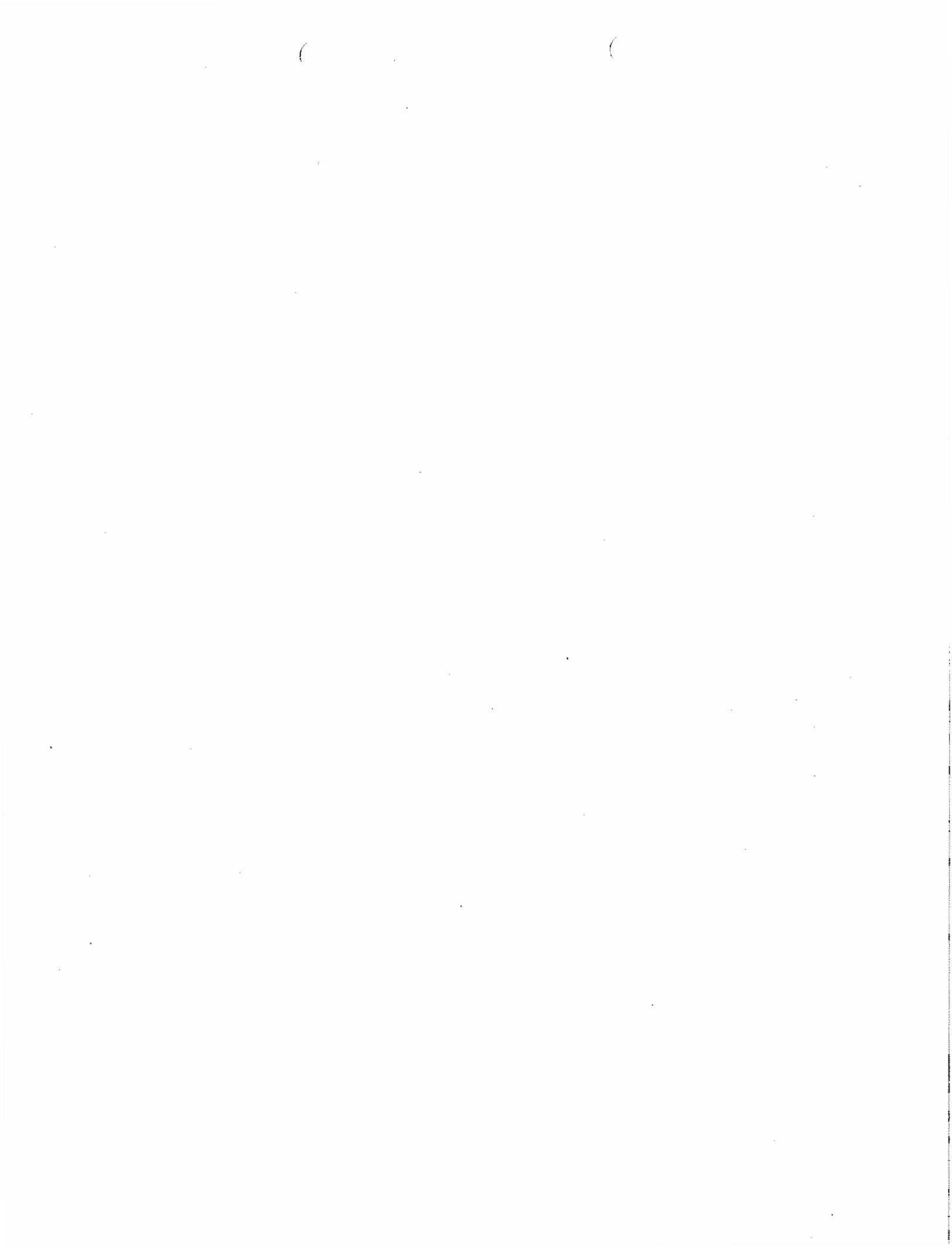
U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-95-D-0022
Delivery Order 0024

March 1999

98-160P(PPT)/032299





CORRECTIVE ACTION PLAN PART A

Facility Name: UST 261, Building 430 Street Address: Hero Rd between Bundy Ave & W. 15th St

Facility ID: 9-089118 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 31°52'18" Longitude: 81°35'35"

Submitted by UST Owner/Operator:

Name: Thomas C. Fry/ Environmental Branch

Company: U.S. Army/HQ 3d, Inf. Div (Mech)

Address: DPW ENRD ENV. Br. (Fry)

1557 Frank Cochran Drive

City: Fort Stewart State: GA

Zip Code: 31314-4928

Telephone: (912) 767-1078

Prepared by Consultant/Contractor:

Name: Patricia A. Stoll

Company: SAIC

Address: P.O. Box 2502

City: Oak Ridge State: TN

Zip Code: 37831

Telephone: (423) 481-8791

I. PLAN CERTIFICATION:

A. UST Owner/Operator Certification

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, and the plan satisfies all criteria and requirements of rule 391-3-15-09 of the Georgia Rules for Underground Storage Tank Management.

Name: THOMAS C. FRY

Signature: *Thomas C. Fry* Date: 03/25/99

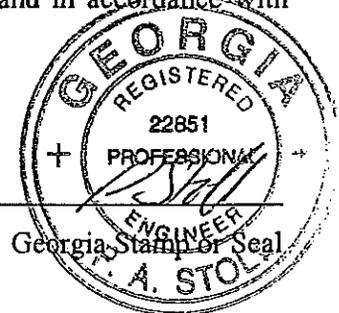
B. Registered Professional Engineer or Professional Geologist Certification

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 Geologists. 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: Patricia A. Stoll

Signature: *Patricia A. Stoll*

Date: 3/23/99



General: READ THE GUIDANCE DOCUMENT FOR CAP PART-A BEFORE COMPLETING THIS FORM. FAILURE TO READ THE GUIDANCE DOCUMENT WILL MOST LIKELY RESULT IN PREPARATION OF AN UNACCEPTABLE REPORT. All text, figures, and tables requested in their respective sections should be prepared strictly in accordance with the Georgia EPD CAP-A guidance document. Please fill out this form as provided. Do not change the size of the fields or alter the placement of each section on each page.

(Appendix I: All Report Figures)

(Appendix II: All Report Tables)

II. INITIAL RESPONSE REPORT

A. Initial Abatement

Were initial abatement actions initiated? YES _____ NO X

If Yes, please summarize. If No, please explain why not.

Actions were not required to abate imminent hazards and/or emergency conditions at the UST 261 site. Therefore, contaminant migration and release prevention, fire and vapor migration, or emergency free product removal was not performed prior to, or during, the removal of UST 261.

B. Free Product Removal

(Table 1: Summary of Free Product Removal – must include Free Product thickness in each well in which it was detected, and volume of product removed)

Free Product Detected? YES _____ NO X

If Yes, please summarize free product recovery efforts.

Continuing free product recovery proposed? YES _____ NO X

If yes, please indicate the method and frequency of removal.

C. Tank History

List current and former UST's operated at site based on owner/operator knowledge consistent with EPA 7530-1 Form). Systems must be illustrated on Figure 2 (Site Plan), as described in section D below.

CURRENT UST SYSTEMS (if applicable)

<u>Tank ID Number</u>	<u>Capacity (gal)</u>	<u>Substance Stored</u>	<u>Age (yrs)</u>	<u>Meets 1998 Upgrade Standards (Yes/No)</u>
N/A	N/A	N/A	N/A	N/A

FORMER UST SYSTEMS (if applicable)

<u>Tank ID Number</u>	<u>Capacity (gal)</u>	<u>Substance Stored</u>	<u>Date Removed</u>
261	500	Waste Oil	6/25/96

D. Initial Site Characterization

(Figure 1: Vicinity/Location Map)
 (Figure 2: Site Plan)

1. Regulated Substance Released (gasoline, diesel, used oil, etc.): used oil
 Discuss how this determination was made and circumstances of discovery.

Characterization of petroleum-related contamination at the site was initiated during UST system closure activities on June 25, 1996, by Anderson Columbia Environmental, Inc (ACE). After removal of the tank and ancillary piping, one soil sample was collected from the tank pit (Figure 7). Soil sample 261-T1-S1 contained 2.51 mg/kg of BTEX, 0.517 mg/kg of SVOCs and 282 mg/kg of TPH. The method detection limit for benzene (0.0115 mg/kg) exceeded applicable soil threshold levels.

2. Source(s) of Contamination: Unknown; piping leakage or tank overflow suspected
 Discuss how this determination was made.

A detailed schematic diagram illustrating the former UST 261 and ancillary piping is available at Fort Stewart DPW. Employees of the Car Care Center hand carried waste oil to the tank and poured the oil into the tank, which often resulted in surface spillage. However, during removal activities by ACE, no holes in the tank were reported. Therefore, the source of contamination is believed to have been piping leakage and/or tank overflow from operation practices.

3.

Local Water Resources

(Figure 3: *Quadrangle Map – Public and Private drinking water and surface water*)
 (Appendix III: *Water resources survey documentation, including, but not limited to: USGS database search, interview forms, and documentation of field survey*)

- a. Site located in high/average X OR low _____ groundwater pollution susceptibility area?
- b. Water Supplies within applicable radii? YES X NO _____
 If yes,
- i. Nearest public water supply located within: 1750 feet
 - ii. Nearest down-gradient public water supply located within: 1750 feet
 - iii. Nearest non-public water supply located within: >2,640 feet
 - iv. Nearest down-gradient non-public water supply located within: >2,640 feet
- c. Surface Water Bodies and sewers:
- i. Nearest surface water located within 1000 feet
 - ii. Nearest down-gradient surface water located within 1000 feet
 - iii. Nearest storm or sanitary sewer located within: 50 feet
 - iv. Depth to bottom of sewer at a point nearest the plume est. 4-6 feet

4.

Impacted Environmental Media

a. *Soil Impacted*

(Table 2: *Soil Analysis Results*)
 (Figure 4: *Soil Quality Map*)
 (Appendix IV: *Soil Boring Logs*)
 (Appendix V: *Soil Laboratory Reports*)
 (Appendix VI: *ATL Calculations, if applicable*)

Provide a brief discussion of soil sampling.

Continuous soil cores were collected at 2.0-foot intervals during the installation of five boreholes. Field headspace gas analyses were performed on each sample to determine the organic vapor concentration. Two soil samples were selected from each borehole for laboratory chemical analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH); and polynuclear aromatic hydrocarbons (PAH). In boreholes where organic vapors were detected, one sample was collected from the 2.0-foot interval where the highest vapor concentration was recorded, and the other from the deepest 2.0-foot interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the 2.0-foot interval nearest the midpoint of the boring, and the other from the 2.0-foot interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. *Soil contamination above applicable threshold levels?*

YES X NO

If yes, indicate highest concentrations in soil along with locations and depths detected.

Benzene exceeded applicable threshold levels in borings 73-04 and 73-05. The benzene concentrations ranged from 0.0136 mg/kg to 1.020 mg/kg in the samples from these two boreholes with the highest contamination observed in sample 730541 at a depth of 14.0 to 16.0 ft BGS. Benzene contamination was also present in the deepest soil sample collected from the vertical profile boring (73-05) at 32.0 to 34.0 ft BGS at a concentration of 0.0455 mg/kg.

ii. *ATLs calculated?*

YES NO X

If yes, present ATLs.

iii. *If ATL's calculated, is soil contamination above ATL's?*

YES NO N/A X

b. *Groundwater Impacted*

(Table 3: Groundwater Analysis Results)

(Figure 5: Groundwater Quality Map)

(Appendix VII: Monitoring Well Details)

(Appendix VIII: Groundwater Laboratory Results)

Provide a brief discussion of groundwater sampling.

At each borehole location, except the vertical profile boring, one groundwater sample was collected from the water table to approximately 5.0 feet below the water table using a direct-push sampling device. At the vertical profile location (73-05), soil samples were collected every 5 feet below the water table until several soil sample intervals indicated a headspace gas measurement of zero. Chemical parameters for groundwater samples submitted for laboratory analysis included BTEX and PAH. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

i. *Groundwater contamination above MCLs?*

YES X NO

ii. *Groundwater contamination above In-Stream Water Quality Standards?*

YES X NO

If yes, indicate highest concentrations in groundwater along with the locations.

Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in borings 73-01, 73-02, 73-03, and 73-04. Benzene and toluene concentrations exceeded their respective MCLs. The highest benzene and toluene concentrations were detected in boring 73-04 at concentrations of 12,000 µg/L and 11,000 µg/L, respectively.

c. *Surface Water Impacted?* YES _____ NO X
If Yes, indicate concentration(s) of surface water sample(s) taken from the surface water body/bodies impacted.

d. *Point of Withdrawal Impacted?* YES _____ NO _____ N/A X
If Yes, indicate concentration(s) of water sample(s) taken from withdrawal point(s).

5. Other Geologic/Hydrogeologic Data

- a. *Depth to Groundwater (ft BTOC):* 7.11 to 8.88 (Table 4: Groundwater Elevations)
- b. *Groundwater Flow Direction:* southeast (Figure 6: Potentiometric Surface Map)
- c. *Hydraulic Gradient* 0.0103 ft/ft
- d. *Geophysical Province:* coastal plain
- e. *Unique geologic/hydrological conditions:* The Hawthorn Formation acts as a confining unit between the surficial and Floridan aquifers

6. Corrective Action Completed or In-Progress (if applicable)

(Table 5: UST System Closure Sampling)
(Figure 7: UST System Closure Sampling)
(Appendix IX: Contaminated Soil Disposal Manifests)

a. *Underground Storage Tank (UST) System Closure:* N/A _____
If applicable, summarize UST system closure activities conducted.

ACE removed UST 261 on June 25, 1996. The UST piping was drained into the tank, and all waste oil was subsequently removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. The ancillary piping was removed to the building where the piping was grouted and capped. After the tank atmosphere was tested with a combustible gas indicator, all accessible tank openings were capped and the tank was lifted from the excavation pit. The tank was triple rinsed, cut up, and sold as scrap metal to Savannah Steel.

b. Excavation and Treatment/Disposal of Backfill Materials and Native Soils

Check one: *No UST removal performed* _____
Returned to UST excavation _____
Excavated soils treated or disposal off site X

If soils were excavated, summarize excavation and treatment/disposal activities:

Approximately 17.3 tons of soil were removed from the UST 261 site. It should be noted that all contaminated soil removed during the entire project (i.e., all USTs removed under contract with ACE, to include clean and non-clean closures) was tested in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. The Installation has records of all manifests and weight tickets for this project. However, site/UST-specific information is not available.

7. Site Ranking:

Environmental Site Sensitivity Score: 12625
(Appendix X: Site Ranking Form)

8. Conclusions and Recommendations

Complete applicable section below, one section only

a. No Further Action Required (if applicable) N/A X
(provide justification)

b. Monitoring Only (if applicable) N/A X
(provide justification)

c. CAP-B (if applicable) N/A _____
(provide justification)

Benzene and toluene concentrations in groundwater exceed their respective MCLs. The horizontal and vertical extent of groundwater contamination was not determined during the CAP-Part A investigation.

III. MONITORING ONLY PLAN (if applicable): N/A X

A. Monitoring points

B. Period/Frequency of monitoring and reporting

C. Monitoring Parameters

D. Milestone Schedule

E. Scenarios for site closure or CAP-Part B

IV. SITE INVESTIGATION PLAN (if applicable): N/A _____
(Figure 8: Proposed additional boring/monitoring well location)

A. Proposed Investigation of Horizontal and Vertical Extent of Contamination In:

1. Soil

N/A _____

9-089118

The UST 261 site (Facility ID #9-089118) and USTs 257-260 site (Facility ID #0-890037) are registered with GAEPD under separate facility identification numbers, although they are located within 60 feet of each other at the closest point (i.e., piping for USTs 257-260 and former UST 261 tankpit). Thus, due to the close proximity of the two sites, and the fact that the groundwater contamination plume encompasses both sites, Fort Stewart proposes to combine the CAP-Part B investigations into one investigation for both sites. The field investigation will include the installation of 12 soil borings as indicated in Figure 8. At each boring, two soil samples will be collected based on PID/FID readings and the borings will be completed as shallow monitoring wells. If the proposed sampling strategy does not achieve horizontal delineational contamination, then additional borings/wells will be installed.

2. Groundwater

- a. Free Product N/A _____

Each of the 12 soil borings will be converted to a monitoring well. The wells will be screened across the water table with 3 feet of screen above the water table in order to detect the presence of free product. All monitoring wells will be completed flush with the ground surface.

- b. Dissolved phase NA _____

One groundwater sample will be collected from each monitoring well and analyzed for BTEX and PAH. To further characterize the vertical extent of contamination at the site 76-21 and 76-22 will be drilled to a depth of approximately 40 feet BGS and soil samples will be collected at 10 foot-intervals. The soil samples will be analyzed for BTEX, PAH, TPH-ORO, and TPH-DRO.

3. Surface Water N/A X

Two surface water and sediment samples will be collected from the drainage swale located east of the site that runs parallel to Hero Road. These samples will be analyzed for BTEX, PAH, and TPH (sediment only).

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

A geotechnical soil sample was collected from the site during the CAP-Part A investigation and analyzed for permeability, porosity, grain size distribution, moisture content, bulk density, specific gravity, and total organic carbon (Tables V-A and VI-A). Each of the groundwater samples collected will be analyzed for dissolved iron. A slug test will be performed in three of the monitoring wells to determine the saturated horizontal hydraulic conductivity. This information will be utilized in the fate and transport modeling or remediation system design.

V. PUBLIC NOTICE

(Figure 9. Tax Map)

(Appendix XI: Copies of public notification letters & certified return receipts or newspaper notice if approved)

UST 261, Building 430 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by GA EPD guidance by publishing an announcement in the *Savannah Morning News* on July 19 and 26, 1998.

VI. CLAIM FOR REIMBURSEMENT (for GUST Trust Fund sites only):

N/A X

(Appendix XII: GUST Trust Fund Reimbursement Application and Claim for reimbursement)

Fort Stewart is a federally owned facility and has funded the investigation for the UST 261 site, Building 430, Facility ID #9-089118, using Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

Binded Copy



DEPARTMENT OF THE ARMY
HEADQUARTERS, 3D INFANTRY DIVISION (MECHANIZED) AND FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1557 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4928

MAR 19 1999

REPLY TO
ATTENTION OF

Directorate of Public Works

CERTIFIED MAIL

Georgia Department of Natural Resources
Environmental Protection Division
Underground Storage Tank Management Program
Attention: Ms. AJ McAllister, Environmental Specialist
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

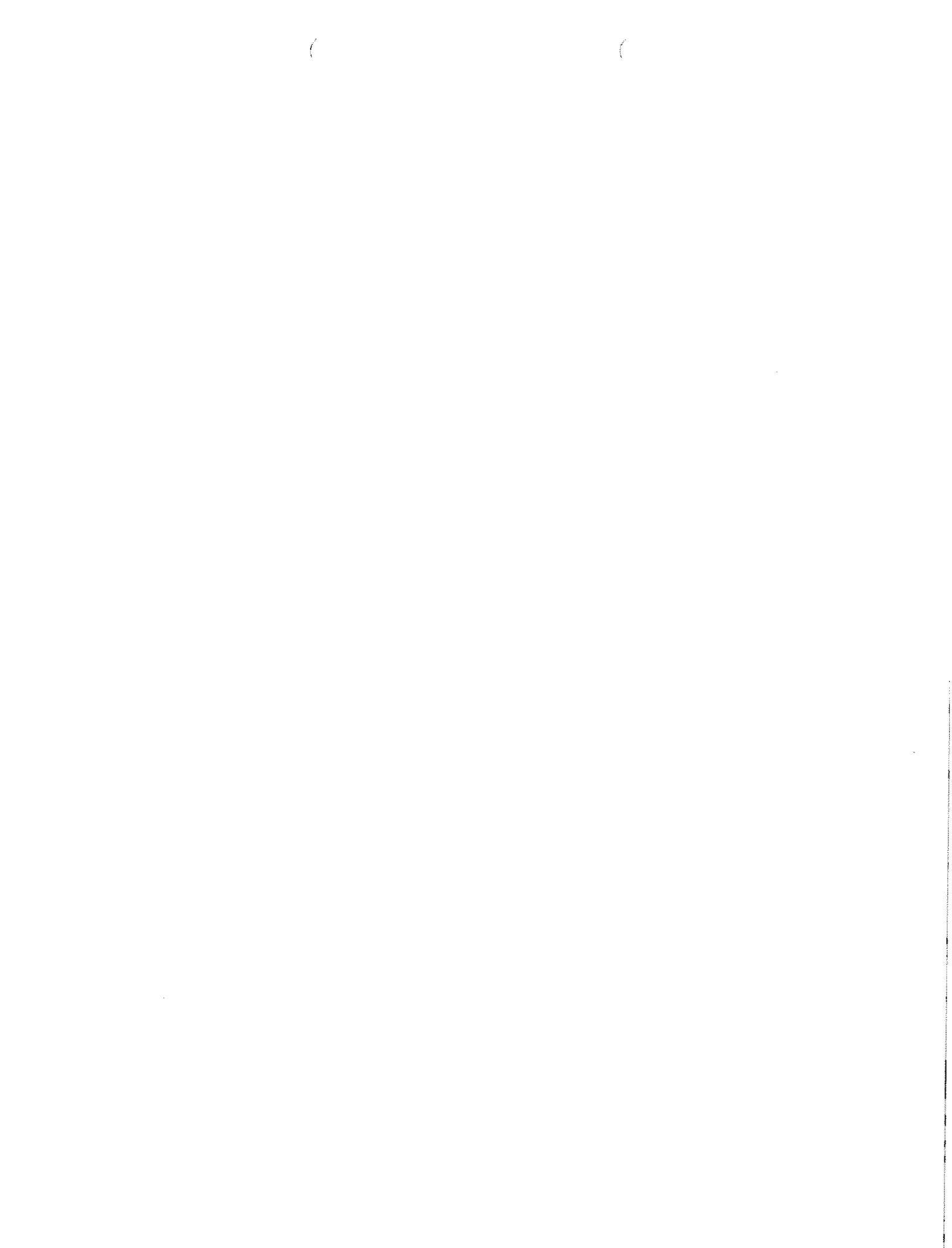
Dear Ms. McAllister:

Fort Stewart is pleased to submit the Corrective Action Plan (CAP)-Part A for Underground Storage Tanks (USTs) #257 through #260, formerly located at Building 430, Facility Identification Number 0890037, Fort Stewart, Georgia.

This site is located greater than 500 feet from a withdrawal point for a public water supply and the area is considered to be of average or higher groundwater pollution susceptibility. Therefore, soil threshold levels for these sites were taken from Georgia Department of Natural Resources Environmental Protection Division (GA EPD), Chapter 391-3-15, Table A, Column 2, and the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) were used for comparison to groundwater analytical data.

The contract to perform the field work at USTs #257 through #260 was awarded prior to publication of the May 1998 CAP-Part A Guidance document. Therefore, analytical methods utilized during the CAP-Part A investigation were the old SW846 methods, not the new methods outlined in the Guidance Document, Underground Storage Tank Release: Corrective Action Plan-Part A, May 1998. However, even though the CAP-Part A was considered "underway" when the guidance document was released, the new (May 1998) CAP-Part A form and guidance document were utilized in preparation of this report.

Ms. Melanie Little, this directorate, discussed the issue of the new guidance with Mr. Michael Coughlan, GA EPD, during a September 1998 visit to Fort Stewart. At that time, Fort Stewart was directed to mention this fact in the respective cover letter for each affected CAP-Part A and to reference the "notice" dated



May 18, 1998 from GA EPD, USTMP stating, "those CAP-Part A's which are already under development may be completed using the November 1995 Guidance Document." Again, since the contract had been awarded with the costs for the old SW846 methods, the only aspect of the May 1998 guidance document which was not adhered to were the sampling procedures. I hope this does not cause an inconvenience to you in your review.

Benzene, toluene, ethylbenzene, and xylenes (BTEX) contamination was identified in groundwater, exceeding their respective MCLs. In addition, the vertical and horizontal extent of groundwater contamination was not determined during the CAP-Part A investigation. Therefore, Fort Stewart recommends that a CAP-Part B be prepared for the site, as outlined in Section II.D.8: *Conclusions and Recommendations*.

Fort Stewart, as noted under *Site Investigation Plan* Section IV.A.1 of the enclosed CAP-Part A, recommends combining the CAP-Part B investigation for this site and UST #261 (Facility Identification Number 9089118). Although these former USTs are registered under separate facility identification numbers, the sites are located at the same facility (Building 430) and are located less than 60 feet from each other at the closest point. Fort Stewart proposes to submit one CAP-Part B Report which will address both facilities. For tracking purposes, two copies of the report will be submitted under each of the two facility identification numbers. A recommended Milestone Schedule is enclosed, and will be initiated by Fort Stewart unless otherwise directed by the Underground Storage Tank Management Program.

If you have any questions or comments, please contact Ms. Melanie Little or Ms. Tressa Rutland, Directorate of Public Works, Environmental Branch, at (405) 364-8461 or (912) 767-7919, respectively.

Sincerely,

for *Thomas C. Lopez* 03/19/99
Ovidio E. Perez
Colonel, U.S. Army
Director, Public Works

Enclosures



MILESTONE SCHEDULE

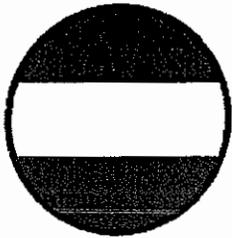
USTs #257 through #260, FACILITY ID. NO. 0890037

PROJECTED DATE*	EVENT
April 1999	Conduct CAP-Part B field work (NOTE: Facility Id. No. 0890037 and 9089118 will be combined for one CAP-Part B investigation and one CAP-Part B report since the sites are located less than 60 feet from each other at the closest point. However, two copies of the report will be submitted, one for each facility Id No.).
July 1999	Review Draft CAP-Part B.
October 1999	Fort Stewart submits one CAP-Part B for Facility Id. Nos. 0890037 <u>and</u> 9089118 to GA EPD, USTMP (two copies, one for each facility Id No.).

NOTE: * These dates are tentative and are based on a negotiated Contractor's schedule.

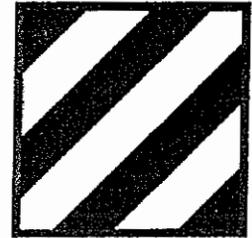


FINAL



FORSCOM

CORRECTIVE ACTION PLAN



3d Inf Div (Mech)

Part A

Underground Storage Tanks 257-260

Facility ID #0-890037

*New fac. ID # 9-089118
(3/29/99)*

Building 430

Fort Stewart, Georgia

Prepared for



U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-95-D-0022

Delivery Order 0024

March 1999

CORRECTIVE ACTION PLAN PART A

Facility Name: USTs 257-260, Building 430 Street Address: Hero Rd between Bundy Ave & W. 15th St

Facility ID: 0-890037 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 31°52'17" Longitude: 81°36'35"

Submitted by UST Owner/Operator:

Name: Thomas C. Fry/ Environmental Branch

Company: U.S. Army/HQ 3d, Inf. Div (Mech)

Address: DPW ENRD ENV. Br. (Fry)

1557 Frank Cochran Drive

City: Fort Stewart State: GA

Zip Code: 31314-4928

Telephone: (912) 767-1078

Prepared by Consultant/Contractor:

Name: Patricia A. Stoll

Company: SAIC

Address: P.O. Box 2502

City: Oak Ridge State: TN

Zip Code: 37831

Telephone: (423) 481-8791

I. PLAN CERTIFICATION:

A. UST Owner/Operator Certification

I hereby certify that the information contained in this plan and in all the attachments is true; accurate, and the plan satisfies all criteria and requirements of rule 391-3-15-09 of the Georgia Rules for Underground Storage Tank Management.

Name: THOMAS C. FRY

Signature: Thomas C. Fry

Date: 03/25/99

B. 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 Geologists. 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: Patricia A. Stoll

Signature: Patricia A. Stoll

Date: 3/23/99



General: READ THE GUIDANCE DOCUMENT FOR CAP PART-A BEFORE COMPLETING THIS FORM. FAILURE TO READ THE GUIDANCE DOCUMENT WILL MOST LIKELY RESULT IN PREPARATION OF AN UNACCEPTABLE REPORT. All text, figures, and tables requested in their respective sections should be prepared strictly in accordance with the Georgia EPD CAP-A guidance document. Please fill out this form as provided. Do not change the size of the fields or alter the placement of each section on each page.

(Appendix I: All Report Figures)

(Appendix II: All Report Tables)

II. INITIAL RESPONSE REPORT

A. Initial Abatement

Were initial abatement actions initiated? YES _____ NO X
If Yes, please summarize. If No, please explain why not.

Actions were not required to abate imminent hazards and/or emergency conditions at the USTs 257 - 260 site. Therefore, contaminant migration and release prevention, fire and vapor migration, or emergency free product removal was not performed prior to, or during, the removal of USTs 257 - 260.

B. Free Product Removal

(Table 1: Summary of Free Product Removal – must include Free Product thickness in each well in which it was detected, and volume of product removed)

Free Product Detected? YES _____ NO X
If Yes, please summarize free product recovery efforts.

Continuing free product recovery proposed? YES _____ NO X
If yes, please indicate the method and frequency of removal.

C. Tank History

List current and former UST's operated at site based on owner/operator knowledge consistent with EPA 7530-1 Form). Systems must be illustrated on Figure 2 (Site Plan), as described in section D below.

CURRENT UST SYSTEMS (if applicable)

<u>Tank ID Number</u>	<u>Capacity (gal)</u>	<u>Substance Stored</u>	<u>Age (yrs)</u>	<u>Meets 1998 Upgrade Standards (Yes/No)</u>
N/A	N/A	N/A	N/A	N/A

FORMER UST SYSTEMS (if applicable)

<u>Tank ID Number</u>	<u>Capacity (gal)</u>	<u>Substance Stored</u>	<u>Date Removed</u>
257	10,000	Gasoline	3/17/93
258	10,000	Gasoline	3/23/93
259	10,000	Gasoline	3/23/93
260	10,000	Gasoline	3/23/93

D. Initial Site Characterization

(Figure 1: Vicinity/Location Map)
 (Figure 2: Site Plan)

1. Regulated Substance Released (gasoline, diesel, used oil, etc.): gasoline
 Discuss how this determination was made and circumstances of discovery.

Characterization of petroleum-related contamination at the site was initiated during UST system closure activities on March 12 - 23, 1993, by Anderson Columbia Environmental, Inc (ACE). After removing the tank and in-place closure of the ancillary piping, 15 soil samples were collected from the tank pit (Figure 7) and analyzed by a flame ionization detector (FID). The closure report indicates that FID readings for the 15 soil samples exceeded 5000 ppm and that the soil was very contaminated; no soil samples were submitted for laboratory analysis during tank closure activities.

2. Source(s) of Contamination: Unknown; piping leakage or tank overflow suspected
 Discuss how this determination was made.

A detailed schematic diagram illustrating the former USTs 257 - 260 and ancillary piping as configured during operation is presented in Figure 2. During removal activities by ACE, no holes in the tank were reported. Therefore, the source of contamination is believed to have been piping leakage and/or tank overflow.

3. Local Water Resources

(Figure 3: *Quadrangle Map – Public and Private drinking water and surface water*)
 (Appendix III: *Water resources survey documentation, including, but not limited to: USGS database search, interview forms, and documentation of field survey*)

- a. Site located in high/average X OR low _____ groundwater pollution susceptibility area?
- b. Water Supplies within applicable radii? YES X NO _____
 If yes,
- i. Nearest public water supply located within: 1750 feet
 - ii. Nearest down-gradient public water supply located within: 1750 feet
 - iii. Nearest non-public water supply located within: >2,640 feet
 - iv. Nearest down-gradient non-public water supply located within: >2,640 feet
- c. Surface Water Bodies and sewers:
- i. Nearest surface water located within 1000 feet
 - ii. Nearest down-gradient surface water located within 1000 feet
 - iii. Nearest storm or sanitary sewer located within: 10 feet
 - iv. Depth to bottom of sewer at a point nearest the plume est. 4-6 feet

4. Impacted Environmental Media

- a. *Soil Impacted*
 (Table 2: *Soil Analysis Results*)
 (Figure 4: *Soil Quality Map*)
 (Appendix IV: *Soil Boring Logs*)
 (Appendix V: *Soil Laboratory Reports*)
 (Appendix VI: *ATL Calculations, if applicable*)

Provide a brief discussion of soil sampling.

Continuous soil cores were collected at 2.0-foot intervals during the installation of 10 boreholes. Field headspace gas analyses were performed on each sample to determine the organic vapor concentration. Two soil samples were selected from each borehole for laboratory chemical analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH); and polynuclear aromatic hydrocarbons (PAH). In boreholes where organic vapors were detected, one sample was collected from the 2.0-foot interval where the highest vapor concentration was recorded, and the other from the deepest 2.0-foot interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the 2.0-foot interval nearest the midpoint of the boring, and the other from the 2.0-foot interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. Soil contamination above applicable threshold levels? YES X NO

If yes, indicate highest concentrations in soil along with locations and depths detected.

Benzene exceeded applicable threshold levels in borings 76-01, 76-02, 76-03, 76-05, 76-09, and 76-10 (Figures 4a and 4b). The benzene concentrations ranged from 0.0108 to 15.7 mg/kg in the samples from these boreholes with the highest contamination observed in sample 760921 at a depth of 4.0 to 5.5 ft BGS. Benzene contamination was not detected below 22.0 ft BGS in the vertical profile boring (76-05). Toluene and ethylbenzene also exceeded applicable threshold levels in borings 76-02, 76-09, and 76-10.

ii. ATLS calculated? YES NO X
If yes, present ATLS.

iii. If ATL's calculated, is soil contamination above ATL's? YES NO N/A X

- b. *Groundwater Impacted*
(Table 3: Groundwater Analysis Results)
(Figure 5: Groundwater Quality Map)
(Appendix VII: Monitoring Well Details)
(Appendix VIII: Groundwater Laboratory Results)

Provide a brief discussion of groundwater sampling.

At each borehole location, except the vertical profile boring, one groundwater sample was collected from the water table to approximately 5.0 feet below the water table using a direct-push sampling device. At the vertical profile location (76-05), soil samples were collected every 5 feet below the water table until several soil sample intervals indicated a headspace gas measurement of zero. Chemical parameters for groundwater samples submitted for laboratory analysis included BTEX and PAH. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

i. Groundwater contamination above MCLs? YES X NO

ii. Groundwater contamination above In-Stream Water Quality Standards? YES X NO

If yes, indicate highest concentrations in groundwater along with the locations.

Benzene, toluene, ethylbenzene, and total xylenes were detected in all the borings except 76-04. BTEX concentrations exceeded MCLs in 9 of 10 samples, 4 of 10 samples, 4 of 10 samples, and 2 of 10 samples, respectively. The highest BTEX concentrations were in 32,700 µg/L in 76-09, 97,800 µg/L in 76-09, 5,210 µg/L in 76-10, and 28,400 µg/L in 76-10, respectively.

c. *Surface Water Impacted?* YES _____ NO X
If Yes, indicate concentration(s) of surface water sample(s) taken from the surface water body/bodies impacted.

d. *Point of Withdrawal Impacted?* YES _____ NO _____ N/A X
If Yes, indicate concentration(s) of water sample(s) taken from withdrawal point(s).

5. Other Geologic/Hydrogeologic Data

- a. *Depth to Groundwater (ft BTOC):* 9.09 to 11.42 (Table 4: Groundwater Elevations)
b. *Groundwater Flow Direction:* southeast (Figure 6: Potentiometric Surface Map)
c. *Hydraulic Gradient* 0.0103 ft/ft
d. *Geophysical Province:* coastal plain
e. *Unique geologic/hydrological conditions:* The Hawthorn Formation acts as a confining unit between the surficial and Floridan aquifers

6. Corrective Action Completed or In-Progress (if applicable)

(Table 5: UST System Closure Sampling)
(Figure 7: UST System Closure Sampling)
(Appendix IX: Contaminated Soil Disposal Manifests)

a. *Underground Storage Tank (UST) System Closure:* N/A _____
If applicable, summarize UST system closure activities conducted.

ACE removed USTs 257 - 260 on March 12 - 23, 1993. The UST piping was drained into the tank, and all gasoline was subsequently removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. The ancillary piping was closed in-place due to the fact that it is covered with asphalt. In-place closure consisted of purging the line and grouting the ends at the tanks and dispensers. After the tank atmosphere was tested with a combustible gas indicator, all accessible tank openings were capped and the tank was lifted from the excavation pit. The tanks were triple rinsed, cut up, and sold as scrap metal to Savannah Steel.

b. Excavation and Treatment/Disposal of Backfill Materials and Native Soils

Check one: *No UST removal performed* _____
Returned to UST excavation _____
Excavated soils treated or disposal off site X

If soils were excavated, summarize excavation and treatment/disposal activities:

It should be noted that all contaminated soil removed during the entire project (i.e., all USTs removed under contract with ACE, to include clean and non-clean closures) was tested in accordance with the disposal facility requirements and transported to Kedesh, Inc., Highway 84, Ludowici, GA, 31316. Approximately 225 cubic yards of nonhazardous, contaminated soil was excavated from this site.

7. Site Ranking:

Environmental Site Sensitivity Score: 25450
(Appendix X: Site Ranking Form)

8. Conclusions and Recommendations

Complete applicable section below, one section only

a. No Further Action Required (if applicable) N/A X
(provide justification)

b. Monitoring Only (if applicable) N/A X
(provide justification)

c. CAP-B (if applicable) N/A _____
(provide justification)

BTEX concentrations in groundwater exceed their respective MCLs and the horizontal extent of groundwater contamination was not determined during the CAP-Part A investigation. The vertical extent of contamination in the former tank pits was determined during the CAP-Part A investigation (76-05). However, vertical delineation within the boundaries of the entire site has not been determined (see Section IV.A.2.b).

III. MONITORING ONLY PLAN (if applicable):

N/A X

A. Monitoring points

B. Period/Frequency of monitoring and reporting

C. Monitoring Parameters

D. Milestone Schedule

E. Scenarios for site closure or CAP-Part B

IV. SITE INVESTIGATION PLAN (if applicable):

N/A _____

(Figure 8: Proposed additional boring/monitoring well location)

A. Proposed Investigation of Horizontal and Vertical Extent of Contamination In:

1. Soil

N/A _____

The USTs 257-260 site (Facility ID #0-890037) and UST 261 (Facility ID #9-089118) are registered with GAEPD under separate facility identification numbers, although they are located within 60 feet of each other at the closest point (i.e., piping for USTs 257-260 and former UST 261 tank pit). Thus, due to the close proximity of the two sites and the fact that the groundwater contamination plume encompasses both sites, Fort Stewart proposes to combine the CAP-Part B investigations into one investigation for both sites. The field investigation will include the installation of 12 soil borings as indicated in Figure 8. At each boring, two soil samples will be collected based on PID/FID readings and the borings will be completed as shallow monitoring wells. If the proposed sampling strategy does not achieve horizontal delineation of contamination, then additional borings/wells will be installed.

2. Groundwater

- a. Free Product N/A _____

Each of the 12 soil borings will be converted to a monitoring well. The wells will be screened across the water table with 3 feet of screen above the water table in order to detect the presence of free product. All monitoring wells will be completed flush with the ground surface.

- b. Dissolved phase NA _____

One groundwater sample will be collected from each monitoring well and analyzed for BTEX and PAH. To further characterize the vertical extent of contamination at the site, 76-21 and 76-22 will be drilled to a depth of approximately 40 feet BGS and soil samples will be analyzed for BTEX, PAH, TPH-DRO, and TPH-GRO.

3. Surface Water N/A X

Two surface water and sediment samples will be collected from the drainage swale located east of the site that runs parallel to Hero Road. These samples will be analyzed for BTEX, PAH, and TPH (sediment only).

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

A geotechnical soil sample was collected from the site during the CAP-Part A investigation and analyzed for permeability, porosity, grain size distribution, moisture content, bulk density, specific gravity, and total organic carbon (Tables V-A and VI-A). Each of the groundwater samples collected will be analyzed for dissolved iron. A slug test will be performed in three of the monitoring wells to determine the saturated horizontal hydraulic conductivity. This information will be utilized in the fate and transport modeling or remediation system design.

V. PUBLIC NOTICE

(Figure 9. Tax Map)

(Appendix XI: Copies of public notification letters & certified return receipts or newspaper notice if approved)

USTs 257 - 260, Building 430 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by GA EPD guidance by publishing an announcement in the *Savannah Morning News* on July 19 and 26, 1998.

VI. CLAIM FOR REIMBURSEMENT (for GUST Trust Fund sites only):

N/A X

(Appendix XII: GUST Trust Fund Reimbursement Application and Claim for reimbursement)

Fort Stewart is a federally owned facility and has funded the investigation for the USTs 257-260 site, Building 430, Facility ID #0-890037, using Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.