

Decision Documents for FST-24B

Transmittal letter sent to GA EPD dated	July 14, 2011
SWMU Assessment Report dated	June 24, 2011
GA EPD Letter received w/ comments dated	April 22, 2010
Transmittal letter sent to GA EPD dated	July 22, 2009
Corrective Action Plan Addendum dated	June 2009
GA EPD Letter received approving RTC dated	November 18, 2004
Transmittal letter sent to GA EPD w/ RTC (missing Rpl pgs) dated	August 23, 2004
GA EPD Letter received w/ comments dated	June 29, 2004
Transmittal letter sent to GA EPD dated	July 22, 2002
Final Corrective Action Plan dated	July 2002
GA EPD Letter received approving Revised Addendum dated	December 6, 2001
Transmittal letter sent to GA EPD dated	July 9, 2001
Revised Addendum dated	June 2001
EPD letter received dated	December 8, 2000
RCRA Facility Investigation (Missing Transmittal letter) dated	April 2000





DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, US ARMY GARRISON, FORT STEWART/HUNTER ARMY AIRFIELD
DIRECTORATE OF PUBLIC WORKS
1587 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-5048

REPLY TO
ATTENTION OF

Office of the Directorate

July 14, 2011

CERTIFIED MAIL

70102780000144282125

Georgia Environmental Protection Division
Attention: Ms. Amy Potter
2 Martin Luther King Jr. Drive, Southeast
Floyd Towers East, Suite 1452
Atlanta, Georgia 30334

Dear Ms. Potter:

Fort Stewart is pleased to submit to the Georgia Environmental Protection Division (GA EPD) two (2) hard copies and one (1) electronic copy of the Solid Waste Management Unit (SWMU) Assessment Report of Polynuclear Aromatic Hydrocarbon (PAH) Detection near SWMU 24B, Fort Stewart, Georgia, dated June 2011 for your review and approval.

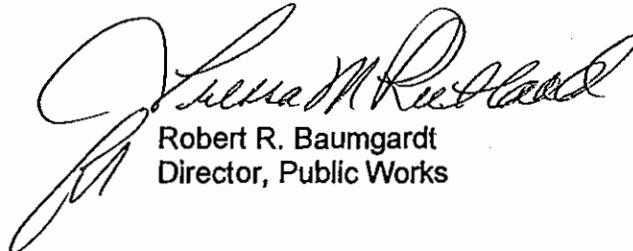
Following a site visit at Fort Stewart on February 3, 2011, GA EPD requested a SWMU Assessment Report be prepared to evaluate the PAH impacts in the surface soil. This report summarizes the surface soil investigations completed to date.

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact Ms. Algeana Stevenson at (912) 315-5144 or Ms. Tressa Rutland, Directorate of Public Works, Environmental Division, Prevention and Compliance Branch at (912) 767-2010 should any questions arise regarding the enclosed report.

Sincerely,



Robert R. Baumgardt
Director, Public Works

Enclosures





IMA



3d Inf Div (Mech)

SWMU Assessment Report

Polynuclear Aromatic Hydrocarbon Detections near SWMU-24B

Fort Stewart, Georgia

EPA ID # GA9 210 020 872

June 24, 2011



3. Conclusions and Recommendation

The results of historical soil investigations performed around former Building 1056 as part of the SWMU 24B RFI and CAP indicate that PAHs are present in surface soils. Four PAHs, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene have been detected at concentrations exceeding remedial levels developed in the SWMU 24B Phase II RFI (SAIC 2001). The calculated remedial levels are protective of hypothetical future residential exposure and are based on an ILCR of 1×10^{-5} (SAIC 2001).

SWMU 24B is associated with the Old Radiator Shop/Paint Booth that was located in the northern corner of Building 1056. Waste generated at the radiator shop was related to the maintenance and cleaning of radiators. It is assumed that the wastes included a caustic waste cleaning solution, sodium hydroxide, a water-based fluorescein dye solution, and spent recirculation water from the wet curtain spray paint booth (SAIC 2000). The most likely pathway for releases to have occurred from the historical radiator shop and paint booth operations was through leakage onto the concrete slab and subsequent migration through expansion joints, cracks, or around edges of the pad. Pre-demolition soil samples that were collected from beneath Building 1056 concrete slab in August 2004 indicated that no PAHs were detected in either the surface or shallow subsurface soil samples. The absence of PAHs below the Building 1056 concrete slab is a strong indicator that the PAH detections in surface soils around the building are not related to the historical radiator shop and paint booth operations.

Former Building 1056 is located in an industrial area and is currently used as a staging area for Army vehicles. Based on the historical activities at SWMU 24B and the area where the PAHs were detected, the surface soil impacts are not believed to be associated with the historical radiator shop and paint booth operations. Rather, the PAH impacts are believed to be ubiquitous and related to the industrial nature of the site and the current use of the site. PAHs are a common soil constituent in heavily industrialized areas because of the large number of activities that can generate them. These activities include asphalt paving, equipment lubricants, dust suppression, and combustion processes. Recent photographs taken in the area surrounding Building 1056 (Appendix A) show numerous vehicles parked around the Site with drip pans placed beneath them. Additionally, asphalt patches and debris were observed around Building 1056, indicating that parts of area were previously paved. The current use of this area as a motor pool coupled with the evidence of previous asphalt paving in the area are believed to be the cause of the low level PAH detections in surface soil

surrounding Building 1056. The general industrial nature of the site and current use as a motor pool are not expected to change in the foreseeable future. Consequently, Fort Stewart recommends that no further investigation or remediation of the PAHs in surface soil be required in the area surrounding former Building 1056.



Georgia Department of Natural Resources

2 Martin Luther King Jr. Drive, S.E., Suite 1162 East, Atlanta, Georgia 30334
Chris Clark, Commissioner
Environmental Protection Division
F. Allen Barnes, Director
404-656-2833

April 22, 2010

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Robert R. Baumgardt
Director, Public Works
Headquarters, 3D Infantry Division (Mechanized) and Fort Stewart
Directorate of Public Works, Building 1137
Environmental Branch (ATTN: Algeana Stevenson)
1550 Frank Cochran Drive
Fort Stewart, GA 31314-4927

RE: Corrective Action Plan Addendum for SWMU 24B (Old Radiator Shop/Paint Booth) dated June 2009; Fort Stewart; EPA ID No. GA9 210 020 872.

Dear Mr. Baumgardt:

Georgia Environmental Protection Division (EPD) has received Fort Stewart's Corrective Action Plan (CAP) Addendum for SWMU 24B (Old Radiator Shop/Paint Booth) dated June 2009, on July 29, 2009. EPD has reviewed the above-referenced document and has generated the following comments:

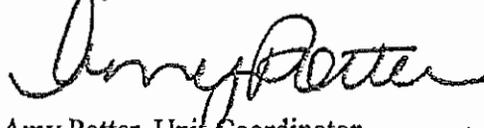
1. From our review, it appears that the surface soil contamination around the vicinity of soil sample SS-17 is not related to the historical activities at the Old Radiator Shop/Paint Booth, and needs to be addressed separately from SWMU 24B. Since there is no proposed corrective action for the groundwater in this CAP Addendum, the submitted CAP Addendum is not necessary; any further action regarding SWMU 24B should be addressed in the CAP Progress Reports. Please rescind this CAP Addendum.
2. Please submit, within sixty (60) days, a new SWMU Assessment Report (SAR) for the soil contamination around the vicinity of SS-17 in accordance with Section III.B.2 of Fort Stewart's Hazardous Waste Permit #045(S). The SAR should describe whether a prior and/or continuing release of hazardous waste, hazardous constituents, or hazardous waste constituents has occurred. At a minimum, please include the following:
 - Description of the general location around the contaminated area
 - Location of the contaminated area in a topographic map of appropriate scale
 - Description of the contaminated area, including historical sampling results
 - Description of the suspected source(s)

Mr. Baumgardt
Fort Stewart
April 22, 2010
Page 2

- Purposes (past and present) of the area within the vicinity of the contaminated area, including dates
- Brief summary of the investigative and remedial actions taken in response to SWMU 24B.

Based on the contents of the SAR, EPD shall determine the need for further investigations at the SWMU covered in the SAR. If EPD determines that such investigations are needed, Fort Stewart shall be notified to prepare a RCRA Facility Investigation Work Plan. Should you have any questions concerning this correspondence, please contact Mr. Mo Ghazi or William Powell of my staff at 404-657-8674/8680.

Sincerely,



Amy Potter, Unit Coordinator
Hazardous Waste Management & Remediation Program
Land Protection Branch

c: David Lyle, Manager, EPD-Coastal District
Tressa Rutland, Fort Stewart (via facsimile)

File: Fort Stewart (G)

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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 22 2009

Office of the Directorate

CERTIFIED MAIL
 70081830 00016191 5043

Georgia Environmental Protection Division
 Attention: Mr. Mahamad Ghazi, PhD
 2 Martin Luther King Jr. Drive, Southeast
 Floyd Towers East, Suite 1452
 Atlanta, Georgia 30334

C
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 P4

Dear Mr. Ghazi:

Fort Stewart is pleased to submit two hard copies and one electronic copy of the Corrective Action Plan Addendum SWMU [Solid Waste Management Unit] 24B (Old Radiator Shop/Paint Booth, Fort Stewart, Georgia dated June 2009 for your review and approval.

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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
 Robert R. Baumgardt
 for Director, Public Works

Enclosures





Infrastructure, environment, buildings

Imagine the result



IMA



3d Inf Div (Mech)

Corrective Action Plan Addendum

SWMU 24B (Old Radiator Shop/Paint Booth)

Fort Stewart, Georgia

EPA ID # GA9 210 020 872

June 15, 2009



4. Corrective Action Activities

As discussed in Section 3.2, benzo(a)pyrene concentration in the surface soil near SS-17 and SS-55 (Figure 2-1) remain above the established remedial level of 890 ug/kg. Consequently, an excavation is recommended to remove benzo(a)pyrene impacts in the surface soil.

4.1 Surface Soil Removal

Excavation of the soils will be coordinated and conducted in a systematic manner to prevent releases of COCs to the environment. Soil excavation will be performed using standard construction equipment (i.e. backhoe). Based on the soil sample results (Table 2-2), surface soil will be excavated from a 10 ft by 10 ft area around SS-55. Soils will be excavated to an approximate depth of 1 ft bls. The estimated volume of soil to be removed from the excavation area is approximately 3.7 cubic yards based on a 10 ft x 10 ft x 1 ft deep area. Two confirmation soil samples will be collected from the sidewalls of the excavation and one from the bottom of the excavation to verify all the impacted soils are removed. The excavated soil will be placed in a roll-off and characterized. Following characterization, the soil will be transported to an off-site permitted treatment or disposal facility. Disposal manifests for soil removed from the site will be included in the next CAP progress report.

The confirmation soil samples will be transported in properly cooled and sealed containers to Shealy Laboratory in West Columbia, South Carolina (NELAP No. E87653) under appropriate preservation and chain-of-custody procedures. Each sample will be analyzed for benzo(a)pyrene by USEPA Method 8270D. Soil below the established remedial level of 890 ug/kg will be considered clean.

If the confirmation soil sample results exceed the soil remedial level of 890 ug/kg, additional surface soil will be excavated until all of the impacts have been removed.

4.2 Stormwater and Liquids Control

Excavation activities are not expected to reach the water table. Liquid wastes, if any, from the excavation will be containerized on site in portable tanks and analyzed to determine disposal options. Following characterization, the liquids will be transported to a treatment and/or disposal facility. The handling and transport of the liquid-filled containers will be conducted in a controlled and safe manner. In the event of a spill or release, the liquid released will immediately be contained.

4.3 Material Transport and Disposal

Material handling, packaging, and transport will be in accordance with applicable Department of Transportation (DOT) requirements. The Generator/Owner, Contractor, and Transporter will control the documentation (manifesting and labeling of containers/shipments) and transportation of non-hazardous materials. The assignment of responsibilities of each party will be designated prior to implementation. The minimum requirements for health and training of the transporter's personnel will be specified and will reference the DOT's Transporter Regulations for Hazardous Materials (CFR 49, Part 100 to 177).

The soil will be containerized and characterized prior to disposal. Following characterization, the excavated soil will be transported to an off-site permitted treatment or disposal facility.

4.4 Site Restoration

Following soil removal, the resulting excavation will be backfilled and regraded. The excavation will be backfilled and compacted to grade using clean fill.

4.5 Health and Safety

All activities will be conducted in general accordance with the ARCADIS Health and Safety Plan (ARCADIS 2009). In addition, the soil removal contractor will prepare a Contractor Site Safety Plan (CSSP). The CSSP will comply with the basic provisions of Occupational Safety and Health Administration (OSHA) Safety and Health Standards (29 CFR 1910), General Construction Standards (29 CFR 1926) and OSHA Hazardous Material Operations and Emergency Response (29 CFR 1910.120).

Site specific training consisting of an initial site safety briefing and daily "tailgate" safety briefings will be performed to inform site workers of the specific hazards identified during site activities and any changes from the initial safety briefing. The initial safety meeting will consist, at a minimum, of the following topics:

- Worker responsibilities
- Physical hazards
- Biological hazards
- Chemical hazards

ARCADIS

- Protective clothing/equipment to be used
- Air monitoring and action levels
- Hazard communication
- Emergency procedures, including emergency phone numbers
- Location of emergency equipment (first aid kits, eyewashes, and fire extinguishers)
- Name and location of the nearest hospital or urgent treatment facility
- Any client-mandated procedures

Mechanized equipment like skid steers, trackhoes, bulldozers and backhoes represent serious hazards to site workers. Care shall be taken by all personnel to exercise caution when working with mechanized equipment to prevent clothing from being caught in moving parts, placing body parts in close vicinity to pinch points on the equipment or using the equipment on slopes or unstable surfaces in excess of the manufacturer's recommendations. Site personnel, visitors, or other persons who are not performing necessary work shall remain at a distance of at least 15 ft from any moving part of the mechanized equipment. All workers within 15 ft of the equipment are required to wear, at a minimum, hard hats, safety glasses, steel-toed boots, and hearing protection, if applicable. Open excavations will be barricaded overnight and the site will be secured using the existing locked security fencing.

4.6 Schedule

Upon approval of the CAP Addendum for SWMU 24B, Fort Stewart will schedule and implement the soil removal activities. The initial soil removal and site restoration is anticipated to take approximately 1 week to complete.

Georgia Department of Natural Resources

2 Martin Luther King Jr. Drive, S.E., Suite 1470, Atlanta, Georgia 30334
Noel Holcomb, Commissioner
Environmental Protection Division
Carol A. Couch, Ph.D., Director
404-463-0080

November 18, 2004

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Michael W. Biering, Colonel, U.S. Army
Director, Public Works
Headquarters, 3D Infantry Division (Mechanized) and Fort Stewart
Directorate of Public Works, Building 1137
Environmental Branch (ATTN: Tressa Rutland)
1550 Frank Cochran Drive
Fort Stewart, GA 31314-4927

RE: Corrective Action Plan (CAP) for the Old Radiator Shop/Paint Booth [Solid Waste Management Units (SWMU) 24B] dated July 2002, as amended; Fort Stewart; EPA ID No. GA9 210 020 872.

Dear Colonel Biering:

The Hazardous Waste Management Branch of the Georgia Environmental Protection Division (GA EPD) is in receipt of the above-referenced document. Based upon our review, GA EPD:

1. has determined that Fort Stewart appropriately responded to our comments contained in GA EPD correspondence (Rabon to Biering) dated June 29, 2004 on the July 2002 version of this plan;
2. has inserted Replacement Cover Pages (both external and internal) and Replacement Pages 1-3, 1-4, C-9 & C-10 dated August 17, 2004 [contained in the Fort Stewart correspondence (Biering to Rabon) dated August 23, 2004] into our two (2) copies of the SWMU 24B Corrective Action Plan dated July 2002;
3. tentatively approves the Corrective Action Plan for SWMU 24B dated July 2002, as amended by the replacement pages referenced in Item No. 2 above; and
4. concurs that any modification to the proposed remedy resulting from the activities outlined in Table C-4 (updated) should be submitted as an addendum to the revised SWMU 24B Corrective Action Plan, as amended (See Section 5.7.2).



Colonel Biering
November 18, 2004
Page 2

Please note that a final decision concerning the Corrective Action Plan for SWMU 24B dated July 2002, as amended, will be made by GA EPD, after completion of a forty-five (45) day public comment period, by our issuance of a Notice of Decision documenting the next modification of your Hazardous Waste Facility Permit #HW-045(S&T). Should you have any questions concerning this correspondence, please contact Albert Wilson of my staff at 404-463-7513.

Sincerely,



Brent Rabon, Coordinator
DoD Remediation Unit
Hazardous Waste Management Branch

c: Jon Johnston, Chief, EPA Region IV RCRA Programs Branch
Darrell Crosby, Manager, GA EPD-Coastal District
Stephen Marks, Fort Stewart and Hunter Army Airfield (via facsimile)
Tressa Rutland, Fort Stewart and Hunter Army Airfield
LeAnn Taylor, Fort Stewart and Hunter Army Airfield

File: Fort Stewart (G)
R:\ALBERT\WDSMOA\FORT STEWART\SWMU24BCAPTENTATIVEAPPROVAL





DEPARTMENT OF THE ARMY
HEADQUARTERS, FORT STEWART
DIRECTORATE OF PUBLIC WORKS
1550 FRANK COCHRAN DRIVE
FORT STEWART, GEORGIA 31314-4927

AUG 23 2004

REPLY TO
ATTENTION OF

Office of the Directorate

EXPRESS MAIL

Georgia Environmental Protection Division
Attention: Mr. Brent Rabon
2 Martin Luther King Jr. Drive, Southeast
Floyd Towers East, Suite 1470
Atlanta, Georgia 30334-9000

Dear Mr. Rabon:

Fort Stewart is pleased to receive the Georgia Environmental Protection Division's (GAEPD) correspondence dated June 29, 2004 regarding the Corrective Action Plan (CAP) for the Old Radiator Shop/Paint Booth (Solid Waste Management Unit 24B), at Fort Stewart Military Reservation, Fort Stewart, Georgia; June 2002; EPA ID No. GA9 210.020 872.

In response to the comments received from GA EPD, Fort Stewart has enclosed two copies of the revised pages for the Corrective Action Plan (CAP) for the Old Radiator Shop/Paint Booth (Solid Waste Management Unit 24B), at Fort Stewart Military Reservation, Fort Stewart, Georgia; August 17, 2004. In addition, a formal Response to Comments Table is provided. Please discard the appropriate existing pages and replace them with the revised ones.

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact Ms. LeAnn Taylor or Ms. Tressa Rutland, Directorate of Public Works Environmental Branch, at (912) 767-2010 should questions arise regarding the enclosed documents.

Sincerely,

Thomas C. Fry
for Michael W. Biering
Colonel, US Army
Director, Public Works

Enclosures



Georgia Department of Natural Resources

2 Martin Luther King, Jr. Drive, S.E., 1470, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Environmental Protection Division
Carol A Couch, Ph.D., Director
404/463-0080

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

June 29, 2004

Michael W. Biering, Colonel, U.S. Army
Director, Public Works
Headquarters, 3D Infantry Division (Mechanized) and Fort Stewart
Directorate of Public Works, Building 1137
Environmental Branch (ATTN: Tressa Rutland)
1550 Frank Cochran Drive
Fort Stewart, GA 31314-4927

RE: Corrective Action Plan (CAP) for the Old Radiator Shop/Paint Booth [Solid Waste Management Unit (SWMU) 24B] at the Fort Stewart Military Reservation, Fort Stewart, GA, dated July 2002; EPA ID No. GA9 210 020 872.

Dear Colonel Biering:

The Hazardous Waste Management Branch of the Georgia Environmental Protection Division (GA EPD) has completed its review of the above-referenced document and generated the following comments.

1. On May 12, 2004, Larry Papetti of my staff conducted a Corrective Action Oversight (CAO) inspection on a limited number of Fort Stewart sites including SWMU 24B. During that inspection, Fort Stewart representatives stated that (a) Building No. 1056 is scheduled to be demolished in FFY2005 and (b) additional soil sampling consistent with Section 5.2.3 (page 5-3) of the CAP will be conducted in the near future at Building No. 1056 and prior to its demolition.

Given this information and the amount of time elapsed since Fort Stewart submitted the SWMU 24B CAP to our agency for review, GA EPD believes that it would be more productive and efficient if Fort Stewart were to complete the following tasks prior to approval of a final remedy at this site.

- a. Collect and analyze soil samples under Building No. 1056 in a manner consistent with Section 5.2.3 (page 5-3) of the CAP.
 - b. Collect and analyze groundwater samples from the SWMU 24B monitoring wells in a manner consistent with the proposal in Section 5.2.1 (page 5-2) of the CAP.
 - c. In a revision to the SWMU 24B CAP dated July 2002, evaluate the analytical results generated from the sampling events described in Item Nos. 1(a) and 1(b) above. GA EPD realizes that this evaluation may modify the final remedy currently selected for SWMU 24B.
2. Inaccurate regulatory reference - *Title Page, and Section 1.3 (Page 1-3)*: The title page lists the regulatory authority as "Resource Conservation and Recovery Act 40 CFR 264 Title II, Subpart C, Section 3004; 42 USC 6901 et seq.," which contains the following minor inaccuracies:



- The Code of Federal Regulations (CFR) reference should appear at the end, after the statute reference, and
- "Subpart C" should read *Subtitle C*.

Therefore, the regulatory authority should read: Resource Conservation and Recovery Act, Title II, Subtitle C, Section 3004; 42 USC 6901 et seq.; 40 CFR Part 264. Please correct accordingly, and similarly revise the first sentence of Section 1.3.

3. Update Operations and Maintenance Schedule - *Table C-4, Page C-9, Appendix C*: The dates shown on the table have passed and should be updated in the revised SWMU 24B CAP.
4. As soon as specific dates are scheduled [i.e., additional groundwater sampling (if applicable) and additional soil sampling], GA EPD requests that Fort Stewart notify Albert Wilson and/or Larry Papetti of my staff in order to provide us with the opportunity to conduct a Corrective Action Oversight inspection of those sampling events.

The revision for the SWMU 24B CAP, appropriately addressing the comments above, must be submitted to GA EPD within one hundred and twenty (120) days from receipt of this correspondence in the form of revised/new pages or a totally revised document. Should Fort Stewart decide to submit revised or new pages, please number with appropriate page numbers and the date revised, e.g., Page 6 (Revised 09/23/2004). GA EPD requests two (2) copies of the revised/new pages or totally revised plan be submitted to our agency and also requests that a Response To Comments (RTC) Summary be provided in the submittal. This RTC Summary should include all of GA EPD's original comments with your responses appended sequentially to each respective comment.

Feel free to contact Larry Papetti or Albert Wilson of my staff at 404-463-0080 if you have questions regarding this letter.

Sincerely,



Brent Rabon, Coordinator
DoD Remediation Unit
Hazardous Waste Management Branch

c: Jon Johnston, EPA Region IV
Tressa Rutland, Fort Stewart and Hunter Army Airfield
LeAnn Taylor, Fort Stewart and Hunter Army Airfield
File: Fort Stewart(G)
R:\ALBERTWDSMOA\FORT STEWART\SWMU -24B CAP Comments Letter 2x





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

JUL 22 2002

REPLY TO
ATTENTION OF

Office of the Directorate

EXPRESS MAIL

Georgia Environmental Protection Division
Attention: Mr. Bruce Khaleghi
2 Martin Luther King, Jr. Drive, Southeast
Floyd Towers East, Suite 1154
Atlanta, Georgia 30334-9000

Dear Mr. Khaleghi:

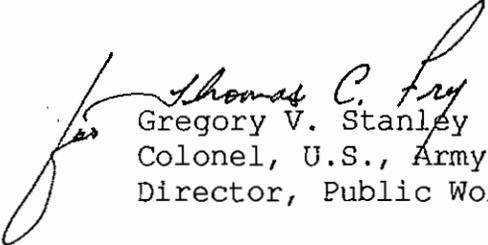
Fort Stewart is pleased to submit two copies of the Final Corrective Action Plan for the Old Radiator Shop/Paint Booth (Solid Waste Management Unit 24B) at Fort Stewart, Georgia, dated July 2002, for your review and approval.

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact Ms. LeAnn Taylor or Ms. Tressa Rutland, Directorate of Public Works Environmental Branch, at (912) 767-2010 should questions arise regarding the enclosed report.

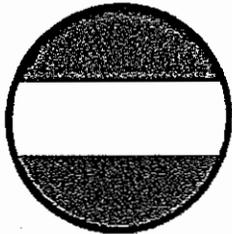
Sincerely,


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

Enclosures

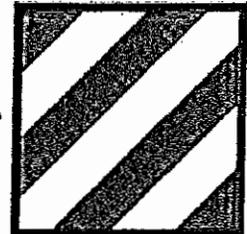


FINAL



FORSCOM

**CORRECTIVE
ACTION PLAN**

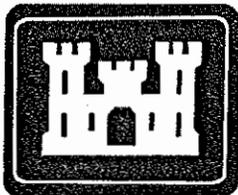


3d Inf Div (Mech)

FOR THE

**OLD RADIATOR SHOP/PAINT BOOTH
(SOLID WASTE MANAGEMENT UNIT 24B)
AT
FORT STEWART MILITARY RESERVATION
FORT STEWART, GEORGIA**

Prepared for



U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-95-D-0022
Delivery Order 0078

July 2002





5.0 CONCEPTUAL DESIGN AND IMPLEMENTATION PLAN

This section presents a conceptual design and implementation plan of the selected corrective action alternative. Based on the available data, a cost-effective corrective action has been selected that will prevent contact with COCs present in surface soil at concentrations above remedial levels. The technology evaluation presented in Chapter 4.0 considered three alternatives for the soil and groundwater based on their ability to attain remedial objectives and their life-cycle costs. Based on that evaluation, Alternative 1, which consists of institutional controls and groundwater monitoring, has been selected. In addition, the institutional controls alternative will not pose any impediments to future remedial actions that might be required by the addendum to this CAP. An O&M Plan for this alternative is presented in Appendix C.

5.1 SELECTED CORRECTIVE ACTION

The selected corrective action alternative for SWMU 24B is Alternative 1, which consists of institutional controls and groundwater monitoring. Biannual groundwater monitoring will be conducted until an addendum to this CAP is issued. The addendum will be prepared following demolition of Building 1056 and sampling of the soil beneath the building slab. Analytical data from these soil samples might modify the selected corrective action and conceptual design. Institutional controls (i.e., land use controls) implemented through the Fort Stewart DPW will be used to control activities that might result in exposure to surface soil at the site. Institutional controls will include posting of signs and annual site inspections.

5.1.1 Justification for Selection of Corrective Action

Alternative 1 has been selected as the remedy because it will effectively achieve the remedial goals in a cost-effective manner. Furthermore, until soil samples below the building are collected and their results evaluated, no definitive decision can be made. Implementation of institutional controls will restrict access to surface soil until the soil below the building can be sampled so that any previously undiscovered contamination can be addressed in an addendum to this CAP. Groundwater monitoring will be performed on a biannual basis to ensure that contaminants are not leaching to the groundwater table. Signs prohibiting digging will be posted every 200 feet around the perimeter of the site.

Justification for the selection of this corrective action alternative is provided in the following evaluations of effectiveness, implementability, and cost.

Effectiveness

The selected corrective action will be effective in protecting human health and the environment. No constituents in groundwater are present at concentrations above MCLs, and modeling indicates that MCLs are unlikely to be exceeded in the future. Continued monitoring will ensure early detection of unknown contaminants that might be present in the inaccessible soil beneath the building. Institutional controls will protect workers from exposure to unacceptable levels of contaminants in surface soil until the building is demolished. Specifically, digging restrictions will be imposed through the Fort Stewart DPW requiring precautions such as personal protective equipment. These restrictions will be posted around the perimeter of the site. The addendum to this CAP will address any new risks resulting from the evaluation of the soil beneath the building. These controls are expected to adequately protect human health and the environment against both the known SVOC soil contamination and potential constituents that might be present beneath the building slab.

Implementability

The selected corrective action is readily implementable. The addendum to this CAP will be compiled after the building is demolished, at a time when future use of the property is less uncertain and the final corrective action can be better integrated with future use plans. Institutional controls are conventional technology, and have been successfully implemented at other Fort Stewart sites in the past. Groundwater monitoring is an activity that has been performed at many sites around Fort Stewart in the past, and no impediments to monitoring at this location are anticipated. Monitoring wells are already in place. Institutional controls are very easy to implement. Signs will be mounted on the fence on the northeastern site boundary and on the side of the building on the southwestern boundary. The remainder of the site will have post-mounted signs.

Cost

The estimated life-cycle cost for the selected corrective action is \$286,000. Alternative 1, which consists of institutional controls and groundwater monitoring, is lowest in cost among the alternatives evaluated. This cost estimate assumes three rounds of groundwater sampling before the addendum to this CAP is issued.

5.2 CONCEPTUAL DESIGN

The conceptual design and cost estimate presented in this section are based on site history and past experience with similar remedial actions.

5.2.1 Groundwater Monitoring

Groundwater will be monitored to detect any contaminants leaching from SWMU 24B. The six shallow wells at the site [MW1 (background), MW3, MW4, MW5, MW6, and MW8] will be low-flow sampled every other year until the addendum to this CAP is approved. Samples will be analyzed for VOCs, SVOCs, and RCRA metals. Although only SVOCs have been identified as COCs in soil, RCRA metals and VOCs are the chemicals that would be expected to be released from a paint booth. Field measurements of DO, temperature, Redox, conductivity, pH, and turbidity will be performed during groundwater sampling. The locations of these wells are shown in Figure 4-1.

5.2.2 Institutional Controls

The Fort Stewart DPW will enforce land use restrictions and requirements for SWMU 24B. Signage prohibiting digging will be posted every 200 feet around the perimeter of the site as shown in Figure 4-1. These land use restrictions can be modified if conditions change or if additional information (e.g., sample results from soil collected under the building) indicates modification is appropriate. These signs will be worded as shown below.

**CONTAMINATED SOIL
NO DIGGING
CONTACT DPW REGARDING
USE RESTRICTIONS
767-2010**

Each sign will have the dimensions of 24 inches by 24 inches. Warning signs will be metal plates with reflective painting and will be of weather-resistant construction. The signs will have a brown background and white lettering.

The positioning of each sign will provide maximum visibility from all locations outside the SWMU's boundaries. All signs will be permanently labeled (for identification purposes) on the back with a numerical identification number as shown in Figure 4-1. The numerical identification number will be located in the front right corner of the warning sign if the sign is installed on the side of a building.

The warning signs will be inspected annually in accordance with the O&M Plan. Damaged signs will be repaired or replaced as needed. Repair or replacement of signs will occur within 1 month after inspection. Should damage be observed between inspections, repair or replacement will occur within 1 month following observation.

5.2.3 Soil Sampling

Following demolition of Building 1056, eight borings will be placed in the area formerly covered by the building. They will be placed in a line parallel to the location of the drainpipe from the former location of the paint booth to the edge of the building footprint. Two intervals will be sampled in each boring, the first in the surface interval (0 to 2 feet bgs) and the second in the interval starting at the depth of the bottom of the drain line (expected to be 2 to 4 feet bgs). The soil samples will be collected using hand augers; however, if a greater depth is required or the consistency of the soil beneath the removed slab prevents the use of hand-auger techniques, hollow-stem-auger techniques might be required to collect the subsurface soil sample. The soil samples will be sent to an off-site analytical laboratory for VOC, SVOC, and RCRA metals analyses.

5.2.4 Addendum to the Corrective Action Plan

The results from the soil sampling described in the previous section as well as a summary of the groundwater monitoring will be published in the CAP addendum. The addendum will evaluate the analytical results and could modify the remedy selected by this CAP.

5.3 COMPLETION CRITERIA

This corrective measures action will be considered complete when both

- soil samples have been collected from beneath Building 1056 and analyzed, and
- the addendum to this CAP has been approved.

Well abandonment is not part of the completion criteria for this CAP because the addendum might require continued groundwater monitoring.

5.4 OPERATIONS AND MAINTENANCE PLAN

Appendix C presents the O&M Plan for the selected remedial alternative. O&M activities include site inspections, sampling and analysis of groundwater, and sampling and analysis of soil beneath Building 1056 following building demolition.

5.5 LIFE-CYCLE COST ESTIMATE

The total life-cycle cost estimate for the institutional controls alternative is \$286,000 (see Appendix B for the cost components). Table 5-1 summarizes the life-cycle cost estimate for the selected corrective action. Capital costs, including indirect costs, are estimated to be \$18,000 and include engineering services (work plan, Site Safety and Health Plan, contracting/procurement, and permitting). O&M costs, including indirect costs, are estimated to be approximately \$176,000. The total cost of Alternative 1 is estimated to be \$286,000, including contingencies, management, health and safety, and contractor profit.

Table 5-1. Estimated Cost for Selected Alternative for SWMU 24B

Site	Capital Costs	O&M	Other ^a	Total
SWMU 24B	\$18,000	\$176,000	\$92,000	\$286,000

^aIncludes construction management, contingency, health and safety, and contractor profit.

5.6 IMPLEMENTATION SCHEDULE

Implementation of institutional controls and groundwater sampling and analysis will begin as soon as practicable after approval of this CAP is received from GEPD. Soil samples from beneath the building cannot be obtained until Building 1056 has been demolished. It is anticipated that the corrective action work plan for institutional controls and groundwater sampling (including appropriate reviews by the Army) will be completed within 3 months after award of a contract to implement the alternative. The work plan for sampling of soil beneath the building will also be prepared at this time as part of the corrective action work plan, although it will not be implemented until the building has been demolished. GEPD review and approval will not be required for the corrective action work plan.

5.7 REPORTS

5.7.1 Corrective Action Plan Progress Reports

CAP progress reports will be prepared annually beginning with completion of the first groundwater sampling event following the approval of this CAP. Each report will summarize institutional control inspections and maintenance. Every other year the reports will include the sampling and analytical results of the groundwater monitoring for that period. Any activities that occurred that required intervention related to the institutional controls will also be reported (e.g., underground utility maintenance). Other activities conducted during the reporting period will also be described in the annual report. A checklist summarizing the items to be addressed in each CAP progress report is presented in the O&M Plan (Appendix C).

A corrective action completion report is not mandated by this CAP. The terms and conditions of the corrective action completion report will be described in the addendum to this CAP.

5.7.2 Addendum to the Corrective Action Plan

An addendum to the CAP will be prepared following demolition of Building 1056 and sampling and analysis of the soil currently under the building slab. The addendum will summarize the groundwater sampling events and present the results of the soil sampling. It will propose modifications to the CAP for

50

SWMU 24B based on conclusions from the data and then-current land use plans for the site, including integration/coordination of the remedy with the construction of new maintenance facilities in the area.

Potential reports required following the final annual report will be described in the addendum to the CAP. The need for any contingent action (if SRCs are detected in the groundwater or if there are changes in land use, for example) will also be discussed as required.

5.8 IMPLEMENTATION PLAN

Upon approval of this CAP by GEPD, Fort Stewart will request funding, procure a contractor, and implement the groundwater sampling and institutional controls aspects of the corrective action. Funding requests, contractor procurement, and implementation of the remaining aspects (soil sampling below the building) will await finalization of future use plans for SWMU 24B. Upon development of a schedule for demolition of Building 1056, the schedule for the soil sampling and development of an addendum to this CAP will be developed. Any necessary revisions to the O&M Plan that become apparent during preparation of the work plan will be submitted to GEPD for concurrence. Substantive changes in the approach or schedule will require that the public be provided with an opportunity for review and comment, in accordance with the Fort Stewart Hazardous Waste Facility Permit. No other submittals will need to be provided to GEPD prior to implementation of the selected corrective action. All provisions contained within this CAP will be superseded by its addendum.

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Georgia Department of Natural Resources

205 Butler Street, S.E., Suite 1162, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Environmental Protection Division
Harold F. Rehels, Director
404/656-2833

December 6, 2001

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Gregory V. Stanley, Colonel, U.S. Army
Director, Public Works
Headquarters, 3D Infantry Division (Mechanized) and Fort Stewart
Directorate of Public Works, Building 1137
Environmental Branch (ATTN: Tressa Rutland)
1550 Frank Cochran Drive
Fort Stewart, GA 31314-4927

RE: Addendum for the Old Radiator Shop/Paint Booth [Solid Waste Management Unit (SWMU) 24B] dated June 2001 to the Phase II RCRA Facility Investigation (RFI) Report for Sixteen (16) SWMUs dated April 2000; Fort Stewart; EPA ID No. GA9 210 020 872.

Dear Colonel Stanley:

The Hazardous Waste Management Branch of the Georgia Environmental Protection Division (GA EPD) has reviewed the above-referenced document and determined that:

1. Fort Stewart has sufficiently responded to our comments on the August 2000 version of this Addendum which were forwarded in correspondence (Khaleghi to Stanley) dated April 20, 2001;
2. The Addendum for the Old Radiator Shop/Paint Booth (SWMU 24B) dated June 2001 to the Phase II RFI Report for Sixteen (16) SWMUs dated April 2000 is complete;
3. The above-referenced document is of superior quality and GA EPD continues to appreciate the expertise with which Fort Stewart's environmental staff and primary contractor, Science Applications International Corporation (SAIC), manages your facility's Corrective Action Program; and
4. Corrective action is required at SWMU 24B pursuant to 40 CFR §264.101(a), as referenced by the Rules of Georgia Department of Natural Resources Environmental Protection Division Chapter 391-3-11 Section .10.

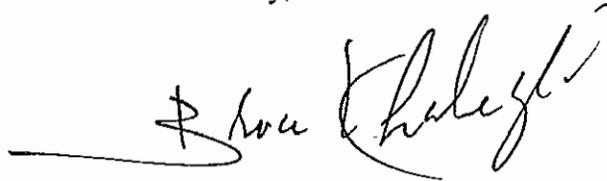
In accordance with Conditions IV.E.1 and IV.E.2 in your Hazardous Waste Facility Permit #HW-045(S&T), Fort Stewart must submit a Corrective Action Plan for SWMU 24B to GA EPD within



Colonel Stanley
December 6, 2001
Page 2

one hundred and eighty (180) days from receipt of this correspondence. Should you have any questions concerning this correspondence, please contact Brent Rabon of my staff at (404)656-2833.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce Khaleghi". The signature is written in a cursive style with a long horizontal line extending to the left.

Bruce Khaleghi, Unit Coordinator
Hazardous Waste Management Branch

c: Mr. Larry Rogers, GA EPD-Southeast Regional Office
File: Fort Stewart(R)
R:BRENTRSTEWART\16SWMUSISWU24BRFIADDAPPROVAL





HEADQUARTERS

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

FORT STEWART

REPLY TO
ATTENTION OF

JUL 09 2001

Office of the Directorate

EXPRESS MAIL

Georgia Environmental Protection Division
Attention: Mr. Bruce Khaleghi
205 Butler Street, Southeast
Suite 1154
Atlanta, Georgia 30303

Dear Mr. Khaleghi:

Fort Stewart is pleased to submit to the Georgia Environmental Protection Division (GA EPD) two copies of the Revised Addendum for SWMU 24B: Old Radiator Shop/Paint Booth to the Revised Final Phase II RCRA Facility Investigation (RFI) Report for the Sixteen (16) Solid Waste Management Units (SWMUs) at Fort Stewart, Georgia, dated June 2001. This report incorporates the review comments received from GA EPD in correspondence dated April 20, 2001 (Khaleghi to Stanley) and the Response to Comment table is provided in the front pocket of each Revised Addendum for your use and convenience.

The enclosed report has been revised to include the additional sampling conducted at SWMU 24B in November 2000. With the concurrence of GA EPD, this supplemental data was incorporated into the Revised Addendum as new Section 5.6 (page 11). The report recommends development of a Corrective Action Plan for SWMU 24B (see Section 10.3, page 38).

In accordance with the Federal Code of Regulations, Section 270.11(d), the following certification is provided by the Installation:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact Ms. Melanie Little or Ms. Tressa Rutland,
Directorate of Public Works Environmental Branch, at (918) 296-9492



-2-

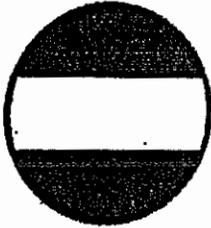
or (912) 767-7919, respectively, should questions arise regarding the enclosed Revised Addendum.

Sincerely,

for Thomas C. Fry
Gregory V. Stanley
Colonel, U.S., Army
Director, Public Works

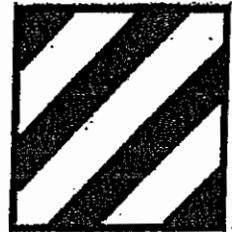
Enclosures

REVISED FINAL



FORSCOM

**ADDENDUM FOR
SWMU 24B:
OLD RADIATOR SHOP/
PAINT BOOTH**



3d Inf Div (Mech)

**TO THE
REVISED FINAL PHASE II RCRA
FACILITY INVESTIGATION REPORT
FOR
16 SOLID WASTE MANAGEMENT UNITS
AT
FORT STEWART, GEORGIA**

Prepared for



**U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT**

Contract No. DACA21-95-D-0022
Delivery Order 0009

June 2001

10.0 CONCLUSIONS AND RISK MANAGEMENT AND SITE RECOMMENDATIONS, SWMU 24B

10.1 SUMMARY OF FINDINGS

The Phase II RFI and the supplemental data evaluation presented in this addendum report was conducted to collect additional analytical data for determining the nature and extent of contamination in environmental media and the potential adverse effects to human health and the environment in the vicinity of SWMU 24B. The data were derived from a series of screening and primary samples collected from surface soil, subsurface soil, and groundwater in the study area during the Phase I and Phase II RFIs. The samples collected were analyzed for VOCs, SVOCs, and RCRA metals. Supplemental data were collected that included six additional surface soil samples and resampling of the monitoring wells. With the concurrence of GEPD, the surface soil was analyzed for SVOCs only, while the groundwater was analyzed for VOCs and SVOCs.

The following section summarizes the significant findings of the Phase I (January 1998) and Phase II RFI (October 1999) sampling and analysis activities.

10.1.1 Surface and Subsurface Soil

Low levels of organics and metals constituents were detected in surface and subsurface soil across the area, including at the site background locations.

- Four VOCs (2-butanone, acetone, carbon disulfide, and toluene) and 17 SVOCs were detected in surface soil. Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver were detected above reference background criteria and are considered to be SRCs in surface soil.
- Five VOCs (carbon disulfide, methylene chloride, tetrachloroethene, toluene, and trichloroethene) and pyrene (an SVOC) were detected in subsurface soil samples. Mercury and selenium were detected above reference background criteria in subsurface soil samples and are considered to be SRCs.

10.1.2 Groundwater

Groundwater was encountered at approximately 6 feet to 8 feet bgs in the monitoring wells during the Phase II RFI. The shallow surficial groundwater flow direction across the site is to the west. The deep surficial groundwater flow direction is southwest to south. The hydraulic gradients of the shallow and deep surficial groundwater are 0.0098 foot/foot and 0.012 foot/foot, respectively. The shallow surficial groundwater flow may intercept the man-made drainage ditch located approximately 500 feet to the west. The deep surficial groundwater flow may intercept a tributary of Mill Creek located approximately 1,200 feet to the south.

- Twelve SVOCs were detected in groundwater during the Phase II RFI. All of the elevated levels of SVOCs detected in groundwater during the Phase II RFI were from DPT (screening) locations. The groundwater from the DPT locations was sampled immediately upon installation and without any development; therefore, the DPT groundwater samples were highly turbid. The elevated concentrations of SVOCs were believed to be the result of particulates in the groundwater. The groundwater was resampled as part of the supplemental investigation (Section 5.6) for VOCs and SVOCs using low-flow techniques. No SVOCs were detected in groundwater during the resampling. However, trichloroethene was detected in the groundwater at a concentration of 2.6 µg/L at one location and is considered to be an SRC in groundwater.

- Barium and chromium were detected above reference background criteria and are considered to be SRCs in groundwater. At two of the locations [MW2 (deep background location) and MW9], the elevated metals concentrations were associated with groundwater collected from deep monitoring well locations that were installed to approximately 43 feet bgs, extending just into the Hawthorn confining (clay) layer. Except for that of barium at one location (MW9), all the filtered metals concentrations at the locations indicate that elevated metals were either nondetect or below reference background criteria. Elevated turbidities were also associated with two of these groundwater samples (MW2 and MW9). These results indicate that the elevated levels of metals were more than likely the result of particulates or colloids in the groundwater.

10.2 CONCLUSIONS

Several assessments were conducted to determine the significance of the contaminant concentrations found at SWMU 24B with respect to their impact on human health and the environment. The assessments included those listed below.

- An analysis of contaminant fate and transport (Chapter 6.0) evaluated the potential for SRCs to migrate from one environmental medium to another (e.g., leaching of constituents from soil into groundwater), resulting in a potential risk to human health and the environment.
- An HHPRE (Chapter 7.0), which used a Step 1 risk screening, identified HHCOPCs.
- An EPRE (Chapter 8.0) was performed for terrestrial and aquatic receptors in the study area.
- An HHBRA (Chapter 9.0) was performed for CMCOPCs identified in the fate and transport analysis and HHCOPCs identified in the HHPRE.

10.2.1 Fate and Transport Analysis

Below are the conclusions regarding contaminant fate and transport.

- Of the organic SRCs identified in soil, methylene chloride, benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, and indeno(*1,2,3-cd*)pyrene exceeded their respective GSSLs and are considered to be CMCOPCs in soil based on leaching to groundwater.
- Of the metal SRCs, arsenic, barium, cadmium, chromium, lead, mercury, and selenium exceeded their respective GSSLs and are considered to be CMCOPCs in soil based on leaching to groundwater.

10.2.2 Human Health Preliminary Risk Evaluation

Based on the results of the screening and the weight-of-evidence analysis, potential HHCOPCs have been identified for surface soil and groundwater. The results of the HHPRE are summarized below.

- HHCOPCs for surface soil include the following compounds: benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*g,h,i*)perylene, benzo(*k*)fluoranthene, indeno(*1,2,3-cd*)pyrene, arsenic, and lead.

- None of the SRCs indicated in subsurface soil exceeded their respective screening values; therefore, there are no HHCOPCs in subsurface soil.
- Trichloroethene is considered to be an HHCOPC for groundwater.

10.2.3 Ecological Preliminary Risk Evaluation

Based on the results of the EPRE screening analysis, ECOPCs were identified in groundwater and surface soil. No direct sediment or surface water pathway exists at SWMU 24B. Those constituents identified as ECOPCs were further evaluated using realistic exposure factors, mean site concentrations or predicted maximum groundwater discharge concentrations at downgradient surface water bodies, and LOAEL-based TRVs, as compared to NOAEL-based TRVs. The results of the EPRE are summarized below.

- There are no ECOPCs in shallow surficial groundwater.
- Barium in deep surficial groundwater is an ECOPC for aquatic biota if groundwater discharges to nearby surface water bodies because it was detected at a concentration exceeding the ESV. Barium is unlikely to pose a hazard to aquatic biota if groundwater discharges to downgradient surface water bodies because the predicted maximum discharge concentration (0 µg/L) is less than the ESV.
- There are no ECOPCs for terrestrial receptors in deep surficial groundwater.
- Benzo(*a*)pyrene, benzo(*k*)fluoranthene, pyrene, cadmium, chromium, lead, and selenium are ECOPCs in surface soil at SWMU 24B because their preliminary HQs exceeded one. There is no TRV for di-*N*-octyl phthalate, so it is an ECOPC by default. PAHs in surface soil are ECOPCs for birds because the HI exceeds one. The supplemental risk calculations for these ECOPCs, using the di-*N*-butyl phthalate TRV as a surrogate for di-*N*-octyl phthalate and the benzo(*a*)pyrene as a surrogate for pyrene, resulted in HQs and HIs less than one. Therefore, cadmium, chromium, lead, selenium, benzo(*k*)fluoranthene, benzo(*a*)pyrene, pyrene, di-*N*-octyl phthalate, and other PAHs are unlikely to pose a risk to terrestrial wildlife receptors.

10.2.4 Human Health Baseline Risk Assessment

An HHBRA was performed to assess the CMCOPCs identified in soil in the fate and transport analysis and HHCOPCs identified in surface soil and groundwater in the HHPRE. The CMCOPCs in soil included five PAHs [benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, and indeno(*1,2,3-cd*)pyrene], seven metals (arsenic, barium, cadmium, chromium, lead, mercury, and selenium), and the VOC methylene chloride. Based on the results of the leachate modeling, cadmium, chromium, and lead are likely to migrate in concentrations that might present a significant risk to human health; therefore, the potential risks associated with these CMCOPCs leaching to groundwater were quantified. The remaining CMCOPCs [benzo(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, indeno(*1,2,3-cd*)pyrene, arsenic, barium, mercury, selenium, and methylene chloride] were not considered to be CMCOPCs based on the results of the leachate modeling and were not evaluated further.

HHCOPCs were identified for surface soil and groundwater. Surface soil HHCOPCs included six PAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene] and two metals (arsenic and lead). Trichloroethene was identified as an HHCOPC in groundwater. The bullets below present the conclusions of the HHBRA.

- HHCOPCs and CMCOPCs in groundwater may potentially migrate to nearby surface water, a drainage ditch approximately 500 feet west of the site that ultimately discharges into Mill Creek. Modeling results indicated that trichloroethene, the PAHs, and lead will not migrate to surface water in significant concentrations; therefore, these constituents were not addressed as COPCs in surface water. Cadmium and chromium were addressed as potential COPCs in surface water as a result of groundwater migration. The potential risk associated with exposure to these constituents was evaluated based on a juvenile wader playing in the drainage ditch and a sportsman fishing in the drainage ditch. The exposures to cadmium and chromium in surface water were below the target risk values; therefore, no adverse systematic health risks are expected for either receptor population. No further evaluation and/or investigation is required.
- HHCOPCs in surface soil consisted primarily of PAHs; however, arsenic and lead were identified as HHCOPCs in surface soil. In addition, chromium, cadmium, and lead were identified as CMCOPCs. Trichloroethene was the only HHCOPC in groundwater. The site is currently secured; therefore, the current on-site receptor is represented by an Installation worker. Groundwater is not currently used for any purpose. Given that groundwater is not used, current receptor populations may be exposed to surface soil HHCOPCs. There are no current off-site receptors or current on-site receptors for groundwater HHCOPCs or CMCOPCs. The future land-use scenarios assumed that all of the surface soil was exposed and that groundwater drinking wells had been placed within the shallow aquifer. Future land-use populations include an Installation worker, a juvenile trespasser, and a resident. The Installation worker and the resident represent both on-site and off-site receptors. The juvenile trespasser is an on-site receptor only. The residential population was divided into an adult and a child because the adult receptor is generally at greater risk from exposure to carcinogens, while the child is at greater risk from exposure to noncarcinogens.
- The results of the quantitative risk characterization concluded that the following constituents are COCs: benzo(a)pyrene (surface soil), benzo(a)anthracene (surface soil), benzo(b)fluoranthene (surface soil), indeno(1,2,3-cd)pyrene (surface soil), benzo(k)fluoranthene (surface soil), arsenic (surface soil), cadmium (modeled groundwater), chromium (modeled groundwater), and lead (modeled groundwater). There are no COCs in groundwater. Benzo(a)pyrene was identified as a COC in surface soil based on the current and future on-site Installation worker, future on-site juvenile trespasser, and both child and adult future on-site residential scenarios. The following PAHs were identified as COCs in surface soil based on the current and future on-site Installation worker and both future on-site residential scenarios: benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. Arsenic and benzo(k)fluoranthene were identified as COCs in surface soil based on exposure of the on-site residents. Cadmium and chromium were identified as CMCOCs for all of the future residential exposure scenarios. Lead was identified as a CMCOC based on the blood-lead levels in children. Remedial levels were developed for the COCs and CMCOCs.
- The development of the remedial levels took into the account regulatory values, target risk values, background reference values for inorganic COCs, and project quantitation limits. Regulatory standards that were considered for remedial levels had to have been derived based on the potential risk to receptors. If regulatory standards were not used for the recommended remedial levels, then risk-based remedial values were recommended based on a target risk value for the receptor population. Risk-based remedial values were derived for the most sensitive receptor population. By protecting the most sensitive receptor, other less sensitive receptor populations will also be protected. Finally, the background concentrations

of inorganic COCs had to be taken into consideration because the remedial actions cannot reduce the concentration of a constituent to levels below the background concentrations. Risk-based remedial values were derived for the remaining surface soil COCs. The COCs in surface soil were identified as COCs based on their carcinogenic risk; therefore, the risk-based remedial levels were calculated based on only the carcinogenic risks. The remedial levels were calculated based on an ILCR of 1×10^{-5} for an on-site resident adult (the most sensitive receptor population for the PAHs) and an on-site resident child (the most sensitive receptor population for arsenic). The remedial level for a CMCOC represents that soil concentration that is unlikely to leach into groundwater or migrate to surface water at concentrations that present a significant threat to human health; therefore, the remedial levels in soil were based upon target groundwater concentrations (i.e., they represent a defined risk to a receptor). The CMCOCs—cadmium, chromium, and lead—were identified as COCs based on their systemic risk; therefore, the risk-based remedial levels were calculated based on only the noncarcinogenic risks. The target groundwater value represents either the MCL or the RBC based on an HI of 0.5 for an on-site resident child (the most sensitive receptor population). Lead has a risk-based action level, which was used for the target groundwater concentration. As a conservative measure, the lower of the two values (i.e., the MCL/action level or the risk-based value) was selected as the target groundwater concentration. If the soil remedial level was lower than the reference background concentration, then the remedial level defaulted to background. The recommended remedial levels for CMCOCs in soil were compared to the reference background level for subsurface soil. Given the comparative thickness of subsurface soil and its proximity to groundwater relative to surface soil, the amount of a constituent leaching to groundwater from the subsurface soil is likely to be much greater than the contribution from surface soil. The concentration of a CMCOC should be evaluated relative to the soil stratum that contributes the greatest amount of an inorganic to groundwater; therefore, the subsurface soil reference background concentrations may be used as the remedial levels for CMCOCs. The project quantitation limits represent the lowest possible recommended remedial levels. If a remedial level is below the project quantitation limit, then the achievement of the remedial levels cannot be verified due to the limitations of the analytical procedures; therefore, the project quantitation limits represent the lowest concentration that can be established as a remedial level.

- The recommended risk-based remedial soil levels for cadmium (2.9 mg/kg), chromium (3.8 mg/kg), and lead (7.6 mg/kg) were based on the protection of groundwater. The risk-based remedial levels for chromium and lead exceeded their respective background reference concentrations. The background reference concentrations for chromium (11.6 mg/kg) and lead (11.1 mg/kg) were recommended as remedial levels for these CMCOPCs.
- The recommended risk-based remedial level for surface soil was 8.93 mg/kg for the following PAHs: benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. The recommended risk-based remedial level for benzo(a)pyrene in surface soil is 0.89 mg/kg. The maximum concentrations of arsenic (2.7 mg/kg) and benzo(k)fluoranthene (49.3 mg/kg) in surface soil were below their recommended remedial levels of 5.96 mg/kg and 89.3 mg/kg, respectively; therefore, no further investigation is required for these constituents.

10.3 RISK MANAGEMENT AND SITE RECOMMENDATIONS

- The nature and extent of groundwater contamination at the site was determined during the Phase II RFI and supplemental data collection activities, and the information gathered is sufficient for development of a CAP.

- The extent of surface soil contamination around SWMU 24B was not fully defined. Additional soil samples were taken to evaluate the extent of HHCOCs in soil (SVOCs), and elevated levels of these constituents (see Figure 18) were identified in areas unlikely to have been contaminated from any operations at the paint booth. The building is located in a highly industrialized portion of the garrison area, and SVOCs are typically endemic to highly industrialized areas. For the purposes of this study, SWMU 24B will be defined as the area bounded by Tilton Avenue to the southeast and the fence bordering the remaining three sides of the area. The CAP will address contamination within this area and evaluate institutional controls, surface soil removal, capping (i.e., asphalt or concrete cover) of the area to prevent potential migration and exposure to surface soil, and environmental monitoring (groundwater) alternatives.
- Fort Stewart recommends that a CAP be developed for SWMU 24B and submitted to GEPD in accordance with a schedule to be determined by the Director [in accordance with Condition IV.E.2 of Fort Stewart's Hazardous Waste Facility Permit #HW-045 (S&T)] if this recommendation is approved. The purpose of the CAP will be to determine the appropriate corrective action(s) to remediate the identified soil contamination to the proposed remedial levels presented in Table 67. If this recommendation is approved by GEPD, Fort Stewart respectfully requests that the Installation's Subpart B permit be amended to reflect the change in investigative status. It is anticipated that the CAP will be submitted to GEPD in the first fiscal quarter (October through December 2001) of 2002. The potential abandonment or use of the monitoring wells will be evaluated in the CAP.

11.0 REFERENCES

- EPA (U.S. Environmental Protection Agency) 1991. *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Supplemental Guidance, Standard Default Exposure Factors (Interim Final)*, OSWER Directive 9285.6-03, Office of Emergency and Remedial Response, Washington, D.C.
- EPA 1993. *Wildlife Exposure Factors Handbook*, Vol. I, EPA/600/R-93/187A, Office of Research and Development, Washington, D.C.
- EPA 1994a. *Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK)*, Version 0.99 (for microcomputers with search and retrieval software).
- EPA 1994b. *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities*, Directive 9355.4-12, Office of Solid Waste and Emergency Response, Washington, D.C.
- EPA 1995. *Supplemental Guidance to RAGS: Region IV Bulletin, Human Health Risk Assessment (Draft)*, Nos. 1-5, EPA Region IV, Office of Health Assessment, November.
- EPA 1996a. *Supplemental Guidance to RAGS, Region IV Bulletins, Ecological Risk Assessment*, Nos. 1-5, EPA Region IV, Office of Health Assessment, October (Draft).
- EPA 1996b. *Soil Screening Guidance: Technical Background Document*, EPA/540/R-95/128, Office of Solid Waste and Emergency Response, May.
- EPA 1997. *Health Effects Assessment Summary Tables, FY 1997 Update*, EPA 540/R-97-036, Office of Solid Waste and Emergency Response, Washington, D.C.

December 8, 2000

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Gregory V. Stanley, Colonel, U.S. Army
Director, Public Works
Headquarters, 3D Infantry Division (Mechanized) and Fort Stewart
Directorate of Public Works, Building 1137
Environmental Branch (ATTN: Melanie Little)
1550 Frank Cochran Drive
Fort Stewart, GA 31314-4927

RE: Phase II RCRA Facility Investigation (RFI) Report for Sixteen (16) Solid Waste Management Units (SWMUs) dated April 2000; Fort Stewart; EPA ID No. GA9 210 020 872.

Dear Colonel Stanley:

The Hazardous Waste Management Branch of the Georgia Environmental Protection Division (GA EPD) has reviewed the above-referenced document and determined the following.

1. In correspondence (Khaleghi to Perez) dated July 14, 1999, GA EPD forwarded two hundred and seven (207) comments to Fort Stewart documenting our review of the February 1999 version of the Phase II RFI Report for 16 SWMUs. Upon receipt of that letter, your facility responded to each of those comments and created a set of Minutes from our September 14, 1999 Comment Resolution Meeting attended by representatives from Fort Stewart, Science Applications International Corporation and GA EPD [See correspondences (Perez to Khaleghi) dated August 20, 1999 and (Perez to Rabon) dated September 27, 1999, respectively]. Based upon our review of your letters, GA EPD formally approved the Fort Stewart Response to Comments (as clarified and/or modified by the September 14, 1999 Meeting Minutes) in correspondence (Khaleghi to Perez) dated October 4, 1999.

Fort Stewart has further provided an amended Response to Comments in Appendix L (Volume III) of the Phase II RFI Report for 16 SWMUs dated April 2000 with correct page numbers and citations in order to ease GA EPD's review process. In addition, a notation is provided in the table if a specific comment, or a portion of a comment, is no longer applicable. We appreciate the detail and proactive manner with which Fort Stewart has responded to our comments; the responses are approved with the exception of those for the six (6) SWMUs addressed by Comment Nos. 7-9 below.

2. GA EPD maintains that the corrective action projects required by the Conditions of the Fort Stewart Hazardous Waste Facility Permit #HW-045(S&T) (Permit) have been exceptionally well-managed and well-executed by Ms. Melanie Little of your staff and by Science Applications International Corporation. It is also our opinion that this Phase II RFI Report for 16 SWMUs dated April 2000 is of

superior quality. As GA EPD has stated before, our agency is utilizing a number of the RFI Reports and Corrective Action Plans (CAPs) created by Fort Stewart as examples for other facilities which are regulated by the Georgia Hazardous Waste Management Act, as amended, O.C.G.A. §12-8-60, et seq.; and Rules for Hazardous Waste Management, Chapter 391-3-11, promulgated pursuant thereto, as amended, which incorporates by reference the Code of Federal Regulations found in 40 CFR Parts 124, 260-268, 270, 273 and 279. We continue to appreciate the high degree of professionalism and technical expertise that Fort Stewart brings to these projects.

3. The Phase II RFI Report for 16 SWMUs dated April 2000 is complete, as qualified by Comment Nos. 7-9 below.
4. Corrective action is required at the SWMUs listed below pursuant to 40 CFR §264.101(a), as referenced by the Rules of Georgia Department of Natural Resources Environmental Protection Division Chapter 391-3-11 Section .10. In accordance with Conditions IV.E.1 and IV.E.2 in your Permit, Fort Stewart must submit CAPs for the following SWMUs to GA EPD within ninety (90) days from receipt of this correspondence.
 - a. Camp Oliver Landfill (SWMU 2)
 - b. TAC-X Landfill (SWMU 3)
 - c. Inactive EOD Area located approximately Nine (9) Miles Northeast of the Garrison Area (SWMU 8)
 - d. Inactive EOD Area in Red Cloud Range, Hotel Area (SWMU 9)
 - e. Inactive EOD Area North of Garrison Area (SWMU 10)
 - f. Inactive EOD Area located approximately Three (3) Miles Northeast of Garrison Area (SWMU 11)
 - g. Active EOD containing Open Detonation Unit and Open Burn Unit (SWMU 12A), Open Detonation Unit (SWMU 12B) and Open Burn Unit (SWMU 12C)
5. Corrective action is required at the SWMUs listed below pursuant to 40 CFR §264.101(a), as referenced by the Rules of Georgia Department of Natural Resources Environmental Protection Division Chapter 391-3-11 Section .10. In accordance with Conditions IV.E.1 and IV.E.2 in your Permit, Fort Stewart must submit CAPs for the following SWMUs to GA EPD within one hundred and eighty (180) days from receipt of this correspondence.
 - a. Industrial Wastewater Treatment Plant (SWMU 18)
 - b. Evans Army Heliport POL Storage Facility (SWMU 29)
6. GA EPD tentatively concurs with the Fort Stewart recommendations that No Further Action (NFA) is required at the following SWMUs.
 - a. Old Fire Training Area (SWMU 14)
 - b. DRMO Hazardous Waste Storage Area (SWMU 17)
 - c. Old Sludge Drying Beds (SWMU 19)
 - d. 3rd Squadron 7th Cavalry Motor Pool and four (4) associated Oil/Water Separators (SWMU 27A)



- e. 1st BN, 3d ADA Motor Pool and associated Oil/Water Separator (SWMU 27E)
- f. 92d ECB (H) Motor Pool and associated Oil/Water Separator (SWMU 27C)
- g. 26th SPT BN Motor Pool and associated Oil/Water Separator (SWMU 27D)
- h. 703d SPT BN (Main) Motor Pool and associated two (2) Oil/Water Separators (
- i. DISCOM Motor Pool and associated Oil/Water Separator (SWMU 27G)
- j. NGTC Block 9900, 10300 Motor Pool and associated two (2) Oil/Water Separators (SWMU 27I)
- k. 3rd BN, 69th Armor Motor Pool Wash Rack and Oil/Water Separator (SWMU 27J)
- l. NGTC Block 10100 Motor Pool Wash Rack and Oil/Water Separator (SWMU 27K)
- m. NGTC Block 9800 Motor Pool Wash Rack and Oil/Water Separator (SWMU 27L)
- n. NGTC Block 9700 Motor Pool Wash Rack and Oil/Water Separator (SWMU 27M)
- o. NGTC Block 9500 Motor Pool Wash Rack and Oil/Water Separator (SWMU 27N)
- p. NGTC Block 9400 Motor Pool Wash Rack and Oil/Water Separator (SWMU 27O)
- q. 396 Transportation Company Wash Rack and Oil/Water Separator (SWMU 27P)
- r. Two (2) 103d MI BN Wash Racks and associated two (2) Oil/Water Separators (SWMU 27Q)
- s. Two (2) Wright Army Airfield Wash Racks and associated Oil/Water Separators (SWMU 27U)
- t. Auto Craft Center Oil/Water Separator (SWMU 27V)
- u. DEH Asphalt Tanks (SWMU 31)
- v. Supply Diesel Tank (SWMU 32)
- w. DEH Equipment Wash Rack (SWMU 34)
- x. NGTC Equalization Basin (SWMU 37)

Please note that a final decision concerning the corrective action status of the SWMUs will be made by GA EPD through issuance of a Notice of Decision documenting the next steps of your Permit.

7. With respect to the Third (3d) Inf. Engineer Brigade Motor Pool and associated two (2) Oil/Water Separators (SWMU 27F), GA EPD tentatively concurs with the Fort Stewart recommendation that NFA is warranted for the Oil/Water Separator located Northeast of Building 1340, consistent with our Comment No. 5 in correspondence (Khaleghi to Perez) dated July 14, 1999; GA EPD will not separate this Oil/Water Separator from the one located Northwest of Building 1340 by further subdividing SWMU 27F in Appendix A of your Permit. Please also note that the investigation results of the second Oil/Water Separator are documented in the Addendum for SWMU 27F/Northwest of Building 1340 dated August 2000 which was received by GA EPD on August 2000 and is currently in process for review by our agency.
8. With respect to the GANG MATES Motor Pool and associated two (2) Oil/Water Separators (SWMU 27J), GA EPD tentatively concurs with the Fort Stewart recommendation that NFA is warranted for the Oil/Water Separator located at Building 10535. However, consistent with our Comment No. 5 in correspondence (Khaleghi to Perez) dated July 14, 1999; GA EPD will not separate this Oil/Water Separator from the one located at Building 10531 by further subdividing SWMU 27J in Appendix A of your Permit. Please also note that the investigation results of the second Oil/Water Separator are documented in the Addendum for SWMU 27J/Building 10531 dated July 2000 which was received by GA EPD on July 20, 2000 and is currently in process for review by our agency.



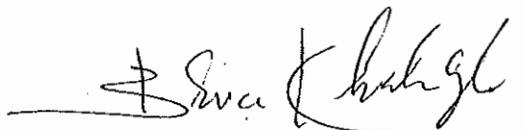
Colonel Stanley
December 8, 2000
Page 4

9. Fort Stewart has submitted Addenda to the Phase RFI Report for 16 SWMUs dated April 2000 for the following SWMUs.
- a. Old Radiator Shop/Paint Booth (SWMU 24B)
 - b. DOL Maintenance Motor Pool and associated two (2) Oil Water Separators (SWMU 27H/Buildings 1056 & 1071)
 - c. NGTC Block 10200 Wash Rack and Oil/Water Separator (SWMU 27L)
 - d. 293 MP Company Wash Rack and Oil/Water Separator (SWMU 27T)

Please note that the investigation results documented in the Addenda for SWMUs 24B, 27H, 27L and 27T have been received by GA EPD and are currently in process for review by our agency.

Should you have any questions concerning this correspondence, please contact Brent Rabon of my staff at (404)656-2833.

Sincerely,

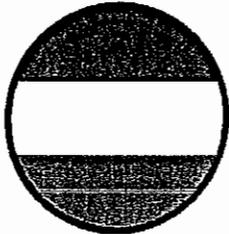


Bruce Khaleghi, Unit Coordinator
Hazardous Waste Management Branch

c: Mr. Larry Rogers, GA EPD-Southeast Regional Office
File: Fort Stewart(R)
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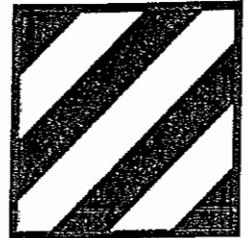


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FORSKOM

PHASE II RCRA FACILITY INVESTIGATION REPORT



3d Inf Div (Mech)

FOR

16 SOLID WASTE MANAGEMENT UNITS AT FORT STEWART, GEORGIA

VOLUME I OF III

Prepared for



U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-95-D-0022
Delivery Order 0009

April 2000





EXECUTIVE SUMMARY

This report summarizes the results of the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for the 16 Solid Waste Management Units (SWMUs) at Fort Stewart, Georgia. The 16 SWMUs include: Camp Oliver Landfill, SWMU 2; TAC-X Landfill, SWMU 3; Inactive EOD Area in Red Cloud Range, Hotel Area, SWMU 9; Inactive EOD Area North of Garrison Area, SWMU 10; Inactive EOD Area Located Approximately Three Miles Northeast of Garrison Area, SWMU 11; Active EOD Containing Open Detonation Unit and Open Burn Unit, SWMU 12A; Old Fire Training Area, SWMU 14; DRMO Hazardous Waste Storage Area, SWMU 17; Industrial Wastewater Treatment Plant, SWMU 18; Old Sludge Drying Beds, SWMU 19; Old Radiator Shop/Paint Booth, SWMU 24B; Motorpools, SWMUs 27A through 27V; Evans Army Heliport POL Storage Facility, SWMU 29; DEH Asphalt Tanks, SWMU 31; Supply Diesel Tank, SWMU 32; DEH Equipment Wash Rack, SWMU 34; and NGTC Equalization Basin, SWMU 37. Four of the 16 sites—Old Sludge Drying Beds, SWMU 19; Old Radiator Shop/Paint Booth, SWMU 24B; Motorpools, SWMUs 27A through 27V; and NGTC Equalization Basin, SWMU 37—had not been investigated previously and were investigated as Phase I RFIs. This report has been prepared by Science Applications International Corporation (SAIC) for the U.S. Army Corps of Engineers (USACE), Savannah District, under Contract DACA21-95-D-0022, Delivery Order No. 0009. The RFI was conducted in accordance with USACE Guidance EM 200-1-3 and the Georgia Environmental Protection Division (GEPD)-approved Sampling and Analysis Plan (SAP) (SAIC 1997).

The 16 SWMUs investigation consisted of 38 SWMU sites (including 22 motorpool sites) as designated under Hazardous Waste Permit HW-045. The sites were divided into 45 distinct geographic areas for investigation. Seven (SWMUs 2, 3, 9, 10, 11, 12A, and 29) of the 38 SWMUs are located outside the garrison area. The remaining 31 (SWMUs 14, 17, 18, 19, 24B, 27A through 27V, 31, 32, 34, and 37) are located within the garrison area.

OBJECTIVES AND SCOPE OF THE INVESTIGATION

The specific objectives of the Phase I and Phase II RFIs for the 16 SWMUs at Fort Stewart, Georgia, as defined in the Phase II RFI SAP (SAIC 1997) (approved by the GEPD in October 1997) are listed below.

Phase I RFI

- Determine if contamination of the environment has occurred.
- Determine whether contaminants, if present, constitute a threat to human health or the environment.
- Determine the need for future action and/or no further action (NFA).

Phase II RFI

- Determine the horizontal and vertical extent of contamination.
- Determine whether contaminants present a threat to human health or the environment.

- Determine the need for future action and/or NFA.
- Gather data necessary to support a Corrective Action Plan (CAP), if warranted.

The information provided in this report is based upon data collected previously during the Phase I RFI (if available) and data collected as part of the Phase II field sampling and analysis. At some of the sites, the Phase II sampling program incorporated an observational approach to sampling, as defined in the Phase II RFI SAP (SAIC 1997). This observational approach used field screening techniques to determine the horizontal and vertical extent of contamination at the SWMU and to identify suitable locations for installation of permanent monitoring wells. The scope of the fieldwork for the Phase I and Phase II sites included the activities listed below.

Phase I Sites

- Collection of direct-push soil samples using a push probe.
- Collection of direct-push groundwater samples using a push probe.
- Installation of permanent groundwater monitoring points or monitoring wells to confirm the nature of potential contamination at a specific push-probe location.
- Collection of surface water and sediment samples at SWMUs at which surface water and sediment were available.
- Surveying of the positions of all sample locations.

Phase II Sites

- Collection of direct-push soil samples using a push probe.
- Collection of direct-push groundwater samples using a push probe, including vertical-profile probes.
- Installation of permanent groundwater monitoring wells both upgradient and downgradient of the site.
- Groundwater sampling at existing monitoring wells (if available) and sampling of newly installed wells around the SWMUs.
- Collection of surface water and sediment samples at SWMUs at which surface water and sediment were available.
- Surveying of the positions of all sample locations.

Nature and Extent of Contamination

Site-related contaminants (SRCs) were identified for each site by comparing the analytical results obtained from soil, groundwater, surface water, and sediment against the reference background criteria. Contaminants with concentrations above the reference background criteria were identified as SRCs. The results of the chemical analyses on surface soil, subsurface soil, and groundwater were screened against the reference

background criteria for the Fort Stewart Military Reservation. Surface water and sediment were screened against site-specific background criteria.

In general, reference background samples were collected from each medium at locations upgradient or upstream of each site so as to be representative of naturally occurring conditions at sites under investigation. Upgradient or upstream samples were not collected at sites under a Phase I RFI (i.e., SWMUs 19, 24B, 27A through 27V and 37). The reference background concentrations for surface soil, subsurface soil, and groundwater were calculated as two times the average concentration of all of the locations selected to be in the background data set. If a chemical was not detected at a site, then one-half the detection limit was used as the concentration when calculating the reference mean background concentration. Surface water and sediment background samples were collected during the Phase II RFI and applied to the SWMUs on a site-specific basis.

Inorganics were considered to be SRCs if their concentrations were above the reference background concentrations, while organics were considered SRCs if they were simply detected because organic constituents are considered to potentially be man-made. SRCs from the nature and extent of contamination evaluation were further evaluated as potential concerns based upon fate and transport characteristics and upon their potential risk to human health and ecological receptors. A summary of SRCs by medium for each SWMU is presented in Table ES-1.

Fate and Transport Analysis

Fate and transport analysis was performed on each SWMU. This analysis included developing a site-specific Conceptual Site Model (CSM) identifying potential contaminant release and migration pathways and determining the potential for SRCs in surface soil, subsurface soil, and/or sediment to migrate to groundwater.

The maximum concentrations of the SRCs determined from nature and extent analysis were compared to U.S. Environmental Protection Agency (EPA) Generic Soil Screening Levels (GSSLs). Generally, if contaminant concentrations in soil fall below the GSSLs and there are no significant ecological receptors of concern, then no further study or action is warranted. SRCs were identified as contaminant migration constituents of potential concern (CMCOPCs) if they were detected at concentrations that exceeded their respective GSSLs. To evaluate leaching of CMCOPCs from soil to groundwater at the 16 SWMUs, groundwater concentrations of CMCOPCs were compared to maximum contaminant levels (MCLs). If an MCL for a chemical was not available, the groundwater concentration was compared to the risk-based concentration, as established by EPA Region III (EPA 1999b). A summary of the results of the fate and transport analysis (CMCOPCs) is presented in Table ES-2.

A weight-of-evidence approach was used to evaluate each CMCOPC identified based on leaching to groundwater. In some instances, the potential impact of CMCOPCs to groundwater, and possibly to surface water, was evaluated (modeled concentrations were compared to risk-based criteria) in a human health baseline risk assessment. CMCOPCs that indicated a potential risk to human health (i.e., that exceeded risk-based screening criteria) from modeling were identified as contaminant migration chemicals of concern, and remedial levels were developed based on protection of groundwater. SWMUs for which a human health baseline risk assessment was performed are identified in Table ES-2.

Human Health Preliminary Risk Evaluation

A human health preliminary risk evaluation (HHPRE) using a Step i risk evaluation approach based on guidance from GEPD was performed for each SWMU to determine the potential human health risks associated with the maximum concentrations of identified SRCs. The Step i risk evaluation involves the components listed below.

- For inorganics, compare detected concentrations to naturally occurring background levels to determine if detected inorganics are naturally occurring or are associated with past activities at the site.
- Identify potential migration and exposure pathways associated with the site and identify potential exposure scenarios to determine appropriate action levels.
- Identify available risk-based action levels for each contaminant detected above background levels or develop levels if they do not exist.
- Compare sample concentrations to action levels to determine if site conditions warrant further evaluation.

Chemicals that exceeded action levels were identified as human health contaminants of potential concern (HHCOPCs). A summary of the HHPRE results (HHCOPCs) is presented in Table ES-2.

A weight-of-evidence approach was used to evaluate each HHCOPC identified in the preliminary risk assessment. In some instances, HHCOPCs were evaluated further in a human health baseline risk assessment. HHCOPCs and/or CMCOPCs (see previous section) that either had hazard indices of 0.1 or incremental lifetime cancer risks of 1×10^{-6} were identified as human health contaminants of concern. Remedial levels were developed that were protective of the most sensitive receptor population, based on a minimum risk level of 3.0 for the total hazard index and 1×10^{-4} for the total incremental lifetime cancer risk. SWMUs for which a human health baseline risk assessment was performed are identified in Table ES-2.

Ecological Preliminary Risk Evaluation

An ecological preliminary risk evaluation (EPRE) based on guidance from GEPD was performed to determine the potential risk to ecological receptors associated with the maximum concentrations of the identified SRCs. The EPRE compared measured concentrations of detected substances to conservative ecological screening values to identify substances detected at the facility that pose a potential hazard to ecological receptors and that are identified as ecological contaminants of potential concern (ECOPCs). A summary of the results of the EPRE (ECOPCs) is presented in Table ES-2.

A weight-of-evidence approach was used to evaluate each ECOPC identified in the preliminary risk evaluation. In some instances, ECOPCs were evaluated further in a supplemental preliminary risk evaluation (SPRE). The SPRE presented a comparison of more realistic exposure estimates to toxicity reference values based on the lowest observed adverse effects levels. The exposure estimates were calculated using measured concentrations and more realistic exposure assumptions such as diets, absorption efficiencies, and area use factors. SWMUs for which an SPRE was performed are identified in Table ES-2.

Conclusions and Recommendations

A weight-of-evidence approach was used with the results from the fate and transport evaluation, HHPRE, human health baseline risk assessment (if performed), EPRE, and SPRE (if performed) to determine the recommendation for each SWMU. The recommendations fell into the following three categories:

- **No Further Action:** NFA was recommended for a SWMU if: (1) the contaminant levels in soil, groundwater, surface water, and sediment were below the reference background criteria, fate and transport values (GSSLs), and/or human health or ecological screening criteria or (2) significant uncertainty was evident, indicating minimal potential risk of migration to groundwater and/or a surface water body and/or to human health and ecological receptors.

- **Additional Investigation (Phase II RFI or additional monitoring):** A Phase II RFI or additional monitoring was recommended if the nature and extent of potential contaminants had not been determined, and further investigation or additional monitoring was required to evaluate extent or potential migration in the future.
- **Corrective Action Plan:** A CAP was recommended if the nature and extent of contamination at a SWMU was determined by the Phase II RFI, there was a potential risk of migration of contaminants to groundwater and/or surface water bodies or a potential risk to human health and ecological receptors, or institutional controls need to be applied to protect the health and safety of humans coming in contact with the site (i.e., inactive EOD areas). Such a site requires a CAP to evaluate appropriate remedial actions to eliminate or minimize these potential risks.

The recommendations for each SWMU are presented in Table ES-3.

Table ES-1. Summary of Site-related Contaminants

SWMU	Type of Investigation	Site-related Contaminants				
		Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment
2	Phase II	2 VOCs, 14 pest., 1 SVOC, and 6 metals	1 VOC, 3 pest., 1 SVOC, and 3 metals	3 VOCs and 3 metals	None	alpha-Chlordane
3	Phase II	4 pest., BEHP, As, Cr, and Pb	2 VOCs, BEHP, 3 pest., Cr, and Cd	3 VOCs, 3 pest., Ba, Cd, Cr, Pb, and Hg	1 SVOC, As, Ba, Cr, and Pb	6 VOCs, As, Ba, Cr, Pb, Hg, and Se
9	Phase I ^a	As, Cr, and Ag	NC	NC	NP	NP
10	Phase II	As, Ba, Cr, and Pb	NC ^b	None	Cd, Cr, and Hg	As, Ba, and Pb
11	Phase II	As, Ba, Cr, Pb, and Ag	NC ^b	None	NP	NP
12A	Phase II	3 SVOCs, 4 exp., and 16 metals	Al, As, Ba, Cr, Fe, Pb, and V	BEHP, 1 exp., and 8 metals	RDX, Pb, Mn, and Hg	1 SVOC, 1 exp., and 9 metals
14	Phase I	2 VOCs, BEHP, and Hg	5 VOCs, Cr, and Hg	1 VOC, Pb, and Hg	NP	NP
17	Phase II	1 VOC	3 VOCs	3 VOCs and Pb	None	None
18	Phase II	1 VOC, Pb, and Hg	5 VOCs, 2 SVOCs, Ba, Cr, Pb, and Hg	9 VOCs, Ba, Cd, and Pb	1 SVOC and Ba	(6 VOCs, 4 SVOCs, As, Ba, Cd, Cr, Pb, Hg, Se, and Ag) ^c
19	Phase I	4 VOCs, 7 pest., and 5 metals	6 VOCs, 9 pest., and 5 metals	BEHP, 7 pest., and 3 metals	NP	NP
24B	Phase I	1 VOC, 10 SVOCs, and 6 metals	2 VOCs	1 VOC, 11 SVOCs, and Hg	NP	NP
27A (Bldg. 1339A)	Phase I	None	2 VOCs and 3 SVOCs	2 VOCs and BEHP	NP	NP
27A (Bldg. 1339B)	Phase I	BEHP and Pb	2 VOCs	1 VOC	NP	NP
27A (Bldg. 1322)	Phase I	3 VOCs and Pb	3 VOCs	Acetone	NP	NP
27B	Phase I	None	1 VOC	ND	NP	NP
27C	Phase I	1 VOC	2 VOCs and 1 SVOC	4 VOCs	NP	NP
27D	Phase I	3 VOCs	1 VOC	None	NP	NP
27E (Bldg. 1628)	Phase I	None	1 VOC	None	NP	NP

Note: Footnotes appear on page ES-8.

Table ES-1. Summary of Site-related Contaminants (continued)

SWMU	Type of Investigation	Site-related Contaminants				
		Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment
27E (Bldg. 1720)	Phase I	NC	2 VOCs and BEHP	1 SVOC	NP	NP
27F (NW Bldg. 1340)	Phase I	NC	3 VOCs and Pb	10 VOCs and 4 SVOCs	NP	NP
27F (NE Bldg. 1340)	Phase I	3 VOCs	8 VOCs and 4 SVOCs	None	NP	NP
27G	Phase I	NC	3 VOCs	1 SVOC	NP	NP
27H (Bldg. 1071)	Phase I	NC	2 VOCs, 11 SVOCs, Pb, and Hg	1 VOC and 9 SVOCs	NP	NP
27H (Bldg. 1056)	Phase I	NC	1 VOC, 1 SVOC, Cd, and Pb	2 VOCs and 4 SVOCs	NP ^d	NP ^d
27I (Block 9900)	Phase I	NC	1 VOC and Pb	None	NC	1 VOC and Pb
27I (Block 10300)	Phase I	NC	None	None	Pb	None
27J (Bldg. 10535)	Phase I	None	None	1 VOC and 1 SVOC	NP	NP
27J (Bldg. 10531)	Phase I	1 VOC and 1 SVOC	NC	2 SVOCs	NP	NP
27K	Phase I	NC	4 VOCs	1 VOC	NP	NP
27L (Block 10200)	Phase I	None	1 VOC and 1 SVOC	8 VOCs and 2 SVOCs	Acetone	None
27M (Block 10100)	Phase I	1 VOC and Pb	2 SVOCs and Pb	1 VOC	NC	Pb
27N (Block 9800)	Phase I	NC	2 SVOCs and Pb	None	NC	5 SVOCs
27O (Block 9700)	Phase I	Pb	None	1 SVOC	1 VOC	Pb
27P (Block 9500)	Phase I	1 VOC and 1 SVOC	1 VOC, 6 SVOCs, and Pb	None	NC	1 VOC and Pb

Note: Footnotes appear on page ES-8.

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ES-7

Table ES-1. Summary of Site-related Contaminants (continued)

SWMU	Type of Investigation	Site-related Contaminants				
		Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment
27Q (Block 9400)	Phase I	Pb	None	None	NC	Pb
27R	Phase I	None	1 VOC and 2 SVOCs	None	NP	NP
27S	Phase I	NC	6 VOCs	None	NP	NP
27T	Phase I	4 SVOCs	None	1 VOC and 1 SVOC	NC	4 VOCs, 9 SVOCs, and Cd
27U	Phase I	1 VOC and Pb	2 VOCs and Pb	4 VOCs	NP	NP
27V	Phase I	1 VOC and Pb	1 VOC and Pb	None	NP	NP
29	Phase II	8 VOCs and Ag	16 VOCs and 14 SVOCs	3 VOCs, 3 SVOCs, As, Ba, and Cr	NP	NP
31	Phase II and IRA	None	6 VOCs and 17 SVOCs	4 VOCs	NP	NP
32	Phase II	2 VOCs, Ba, Cd, Cr, Pb, and Hg	2 VOCs, Pb, and Hg	4 VOCs and 2 SVOCs	NP	NP
34	Phase II	4 VOCs, 2 SVOCs, Ba, Cd, Pb, and Hg	1 VOC, Ba, Cd, Cr, and Pb	3 VOCs	NP	NP
37	Phase I	1 VOC and Hg	2 VOCs and Hg	4 VOCs	NP	(4 VOCs, Ba, Cd, Cr, Pb, Hg, and Se) ^f

^aPhase II RFI was not required at this time. The Phase II RFI will be conducted upon closure of the Red Cloud Range, Hotel Area.

^bPer the GEPD-approved SAP, subsurface soil was not collected because subsurface soil sampling in an EOD area requires approval by the Secretary of the Army.

^cResults from sediment within the NGTC Equalization Basin.

^dSediment was collected; however, the oil/water separator does not discharge to the drainage ditch.

BEHP = Bis(2-ethylhexyl)phthalate.

NA = Not applicable.

NC = Not collected based on field screening results or because no medium (i.e., surface water) was available during the RFI.

ND = Not detected.

NP = No pathway exists.

SVOC = Semivolatile organic compound.

VOC = Volatile organic compound.

Table ES-2. Summary of CMCOPCs, HHCOPCs, and ECOPCs

SWMU	CMCOPCs		HHCOPCs					ECOPCs				HHBRA or SPRE Performed?
	Soil	Sediment	Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment	Surface Soil	Groundwater	Surface Water	Sediment	
2	2 pest., Ar, Ca, and Hg	None	As and Cr	None	None	None	None	4,4'-DDE, Cd, Cr, and Pb	1 VOC, Pb, and Hg	None	None	HHBRA and SPRE
3	None	As	As	None	1 pest. and Hg	1 SVOC, As, Cr, and Pb	As	Pb and Cr	2 pest., Ba, Cd, Pb, and Hg	1 SVOC, Ba, and Pb	2 VOCs, As, Ba, and Se	HHBRA and SPRE
9 ^a	NA ^a	NA ^a	NA ^a	NC ^a	NC ^a	NP	NP	NA ^a	NC ^a	NP	NP	
10	NA ^b	NA ^b	NA ^b	NC	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	
11	NA ^b	NA ^b	NA ^b	NC	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NP	NP	
12A	Ar, Cd, Cr, Pb, Ag, 1 SVOC, and 2 exp.	None	As and Pb	As	BEHP	Hg	None	1 SVOC, Cd, Cr, and Pb	BEHP	Pb and Hg	Ba	HHBRA and SPRE
14	1 VOC	NA	None	None	None	NP	NP	None	Pb, Hg, and 1 VOC	NP	NP	
17	None	None	None	None	1 VOC	None	None	None	1 VOC and Pb	None	None	HHBRA
18	Cr and Hg	(1 VOC, 1 SVOC, Ar, Ba, Cd, Cr, Hg, and Se) ^f	None	None	3 VOCs and Pb	1 SVOC	As	Pb	4 VOCs, Ba, and Pb	Ba and BEHP	None	HHBRA and SPRE
19	2 pest.	NA	None	None	BEHP, 2 pest., and As	NP	NP	Cd, Pb, and 1 pest.	BEHP, 5 pest., Ba, and Hg	NP	NP	HHBRA and SPRE
24B	1 VOC, 3 SVOCs, and Pb	NA	4 SVOCs, As, and Pb	None	1 VOC, 9 SVOCs, and Hg	NP	NP	NP	Hg and 9 SVOCs	NP	NP	
27A (Bldg. 1339A)	None	NA	None	None	BEHP	NP	NP	None	1 VOC and BEHP	NP	NP	
27A (Bldg. 1339B)	None	NA	None	None	Benzene	NP	NP	Pb	Xylenes	NP	NP	
27A (Bldg. 1322)	None	NA	None	None	Acetone	NA	NA	Pb	None	NP	NP	HHBRA

Note: Footnotes appear on page ES-11.

09-18 3P/dec/040300

ES-9

Table ES-2. Summary of CMCOPCs, HHCOPCs, and ECOPCs (continued)

SWMU	CMCOPCs		HHCOPCs					ECOPCs				HHBRA or SPRE Performed?
	Soil	Sediment	Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment	Surface Soil	Groundwater	Surface Water	Sediment	
27B	None	NP	None	None	None	NP	NP	None	None	NP	NP	
27C	None	NP	None	None	None	NP	NP	None	2 VOCs	NP	NP	
27D	None	NP	None	None	None	NP	NP	None	None	NP	NP	
27E (Bldg. 1628)	None	NP	None	None	None	NP	NP	None	None	NP	NP	
27E (Bldg. 1720)	None	NP	NA	None	None	NP	NP	NA	1 SVOC	NP	NP	
27F (NW Bldg. 1340)	None	NP	NA	None	4 VOCs and 4 SVOCs	NP	NP	NA	2 VOCs and 4 SVOCs	NP	NP	
27F (NE Bldg. 1340)	1 VOC	NP	None	None	None	NP	NP	None	None	NP	NP	
27G	None	NP	NA	None	1 SVOC	NP	NP	NA	None	NP	NP	HHBRA
27H (Bldg. 1071)	2 SVOCs	NP	NC	1 SVOC	1 VOC and 7 SVOCs	NP	NP	NC	8 SVOCs	NP	NP	
27H (Bldg. 1056)	None	NP	NC	None	3 SVOCs	NP	NP	NC	2 SVOCs	NP	NP	
27I (Block 9900)	None	None	NC	None	None	NC	None	NC	None	NC	Pb	
27I (Block 10300)	None	NA	NC	None	None	Pb	None	NC	None	Pb	None	
27J (Bldg. 10535)	None	NP	None	None	None	NP	NP	None	1 VOC and 1 SVOC	NP	NP	
27J (Bldg. 10531)	None	NP	None	NC	1 SVOC	NP	NP	None	2 SVOCs	NP	NP	
27K	None	NP	NA	None	None	NP	NP	NA	None	NP	NP	
27L (Block 10200)	None	None	None	None	4 VOCs and 2 SVOCs	Acetone	None	None	2 VOCs and 1 SVOC	None	None	
27M (Block 10100)	1 VOC	None	None	None	1 VOC	NC	None	Pb	None	NC	Pb	
27N (Block 9800)	None	None	NA	None	None	NC	1 SVOC	NA	None	NC	None	HHBRA

Note: Footnotes appear on page ES-11.

Table ES-2. Summary of CMCOPCs, HHCOPCs, and ECOPCs (continued)

SWMU	CMCOPCs		HHCOPCs					ECOPCs				HHBRA or SPRE Performed?
	Soil	Sediment	Surface Soil	Subsurface Soil	Groundwater	Surface Water	Sediment	Surface Soil	Groundwater	Surface Water	Sediment	
27O (Block 9700)	None	None	None	NA	None	None	None	Pb	1 SVOC	None	Pb	
27P (Block 9500)	None	None	None	None	None	NC	None	None	None	NC	Pb	
27Q (Block 9400)	None	None	None	NA	None	NC	None	Pb	None	NC	Pb	
27R	None	NP	None	None	None	NP	NP	None	None	NP	NP	
27S	None	NP	NA	None	None	NP	NP	NA	None	NP	NP	
27T	None	Cd	1 SVOC	None	None	NA	4 SVOCs	None	1 SVOC	NA	Cd	HHBRA
27U	None	NP	None	None	Benzene	NP	NP	Pb	None	NP	NP	
27V	None	NP	None	None	None	NP	NP	None	None	NP	NP	
29	7 VOCs	NP	None	None	1 VOC, 2 SVOCs, and As	NP	NP	None	1 VOC, 2 SVOCs, and Ba	NP	NP	HHBRA
31	1 VOC and 1 SVOC	NP	None	None	Acetone	NP	NP	None	Xylenes	NP	NP	HHBRA
32	1 VOC	NP	None	None	Acetone	NP	NP	Cd, Pb, and Cr	1 VOC and 1 SVOC	NP	NP	HHBRA
34	2 VOCs	NP	None	None	Acetone	NP	NP	Cd and Pb	1 VOC	NP	NP	HHBRA
37	1 VOC	1 VOC ^b and Cd	None	None	Benzene	NP	NP	None	Xylenes	NP	NA	

^aPhase II RFI was not required at this time. The Phase II RFI will be conducted upon closure of the Red Cloud Range, Hotel Area.

^bWith the concurrence of GEPD, fate and transport analysis and human health and ecological preliminary risk assessments were deemed unnecessary. SRCs were determined solely on comparison to background criteria (see Table ES-1).

^cResults from sediment within the NGTC Equalization Basin.

BEHP = Bis(2-ethylhexyl)phthalate.

HHBRA = Human health baseline risk assessment.

NA = Not applicable.

NC = Sample not collected based on field screening results or because no medium (i.e., surface water) was available during the RFI.

NP = No pathway exists.

SVOC = Semivolatile organic compound.

VOC = Volatile organic compound.

Table ES-3. SWMU-specific Recommendations

SWMU	Recommendation
2	CAP
3	CAP
9	CAP
10	CAP
11	CAP
12A	Long-term compliance monitoring and CAP
14	NFA
17	NFA
18	Long-term monitoring and CAP
19	NFA
24B	Phase II RFI
27A (Building 1339A)	NFA
27A (Building 1339B)	NFA
27A (Building 1322)	NFA
27B	NFA
27C	NFA
27D	NFA
27E (Building 1628)	NFA
27E (Building 1720)	NFA
27F (NW Building 1340)	Phase II RFI
27F (NE Building 1340)	NFA
27G	NFA
27H (Building 1071)	Phase II RFI

SWMU	Recommendation
27H (Building 1056)	Phase II RFI
27I (Block 9900)	NFA
27I (Block 10300)	NFA
27J (Building 10535)	NFA
27J (Building 10531)	Phase II RFI
27K	NFA
27L (Block 10200)	Phase II RFI
27M (Block 10100)	NFA
27N (Block 9800)	NFA
27O (Block 9700)	NFA
27P (Block 9500)	NFA
27Q (Block 9400)	NFA
27R	NFA
27S	NFA
27T	Phase II RFI
27U	NFA
27V	NFA
29	CAP
31	NFA
34	NFA
32	NFA
37	NFA