U.S. Army

Final
Interim Remedial Action and Corrective Action Progress Report at Wright Army Airfield Fire Training Area (SWMU 13) Fort Stewart, Georgia

IMA

October 2008

Submitted to:
Directorate of Public Works
Environmental Branch
Fort Stewart, Georgia

Submitted by:
U.S. Army Corps of Engineers
Savannah District

Prepared by:
SpecPro Environmental Services LLC
1006 Floyd Culler Court
Oak Ridge, Tennessee 37830

Under

Contract No. W912HN-07-D-0012
Delivery Order No. 0003

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Acronyms and Abbreviations

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CAP	corrective action plan
COC	contaminant of concern
ft	foot/feet
GA DNR	Georgia Department of Natural Resources
GSSL	Georgia Soil Screening Level
GUST	Georgia Underground Storage Tank Program
IDW	investigation derived waste
IM	interim measure
IRA	interim remedial action
ORC®	Oxygen Release Compound®
ORC Advanced®	Advanced Oxygen Release Compound®
PAH	polynuclear aromatic hydrocarbon
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RL	remedial levels
SAIC	Science Applications International Corporation
SES	SpecPro Environmental Services LLC
SVOC	semi-volatile organic compound
SWMU	solid waste management unit
TPH	total petroleum hydrocarbons
UPC	Utility Protection Center
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

EXECUTIVE SUMMARY

SpecPro Environmental Services LLC (SES), under contract with the U.S. Army Corps of Engineers, Savannah District, has completed interim remedial actions (IRAs) at Solid Waste Management Unit (SWMU) 13 within Fort Stewart, Georgia. This work was accomplished in accordance with the approved work plan, *Final Work Plan for Interim Remedial Action and Corrective Action Progress Report at Wright Army Airfield (WAAF) Fire Training Area (SWMU 13) Fort Stewart, Georgia* (SES, March 2008).

Several site investigations have been conducted at SWMU 13. These investigations include a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), three supplemental investigations, an interim measure, an IRA, groundwater monitoring, and a corrective action plan (CAP) investigation.

In April 2006, subsurface soil samples were collected along the abandoned pipeline at SWMU 13 to determine the extent of potential remaining subsurface soil contamination that might be influencing groundwater contamination. Groundwater samples were also collected during the calendar year 2006 sampling event. The analytical results of these soil and groundwater sampling events and the resulting conclusions and recommendations are found in the report, *Final Corrective Action Plan, Progress Report for Calendar Year 2006, for the Former Fire Training Area at Wright Army Airfield (Solid Waste Management Unit 13) at Fort Stewart Military Reservation, Fort Stewart, Georgia* [Science Applications International Corporation (SAIC), February 2007]. The conclusions and recommendations found in this report formed the basis for the IRAs conducted under this scope of work.

SES performed IRAs at the SWMU 13 site from March 31, 2008 through June 3, 2008. The tasks performed included:

- abandoning groundwater monitoring well 13MW-18;
- excavating contaminated soil from a 20-foot by 20-foot area, 11-12 feet deep, in the area of soil boring SB-15, and placing Oxygen Release Compound® (ORC®) in the excavation;
- installing three groundwater monitoring wells (13MW-18R, 13MW-20, and 13MW-21); and
- injecting ORC® Advanced into the subsurface soil through nine injection points, northeast of the excavation.

Before field activities began, all excavation permits and utility clearances for the SWMU 13 site were obtained. On March 31, 2008, SES personnel and Boart Longyear drilling company abandoned groundwater monitoring well 13MW-18.

In accordance with CAP recommendations, the 20 ft by 20 ft excavation area at SB-15 identified in the approved work plan was marked on the ground using stakes and/or paint. On April 8, 2008, the soil was excavated using a trackhoe. The soil encountered from 0 to 6 feet below ground surface (bgs) was red-tan clayey sand that did not exhibit discoloration or odor indicative of petroleum contamination. This potentially clean soil was placed on plastic sheeting next to the excavation. At a depth of six feet bgs, dark gray sand was encountered that had a petroleum odor. This potentially contaminated soil (from 6 ft bgs to the bottom of the excavation) was placed on plastic sheeting and segregated from the potentially clean soil. Excavation ceased when groundwater was encountered at a depth of 11 to 12 feet bgs.

After excavation was completed, ORC® was applied to the pit. In accordance with the approved work plan, 350 pounds of ORC® was applied to provide uniform coverage of the sidewalls and bottom of the excavation. The stockpile of potentially clean soil was sampled to determine whether it could be used to backfill the excavation, and the stockpile of potentially contaminated soil was sampled to determine the appropriate method of off-site disposal. Because the volume of groundwater entering the excavation presented a threat to the stability of the sidewalls, it was decided to place the potentially clean soil back in the excavation and compact it using the bucket of the trackhoe. This soil filled the excavation to within six feet of the ground surface and stabilized the excavation. At this point, backfilling was halted pending receipt of the soil analysis. On April 11, 2008, SES field personnel were notified that the potentially clean soil was adequate for placement back into the excavation; therefore, backfilling of the remainder of the excavation could proceed. The remaining excavation was then backfilled with soil from an off-site borrow source. The trackhoe was used to place the soil in the excavation and compact it until the fill reached a depth of four feet bgs. The balance of the fill was compacted in lifts using a remote controlled trench compactor in accordance with the approved work plan. Compaction was measured by an independent testing company that verified compaction was achieved. The site was then lightly graded to blend with the surrounding terrain and the disturbed area was seeded, fertilized, and mulched to provide a ground cover of grasses.

As stated previously, a composite sample of the potentially clean soil pile from the excavation was obtained to characterize this soil for re-use as backfill. The sample was analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH) gasoline range organics, and TPH diesel range organics. The analytical results showed constituent concentrations were less than the estimated laboratory detection limits contained in

Table 2, "Laboratory Estimated Quantitation Limits for Soil and Groundwater Samples" of GUST-9 [Georgia Department of Natural Resources (GA DNR), November 2006].

On April 9, 2008 the potentially contaminated soil pile was placed in six construction debris roll-off containers pending final disposition. The containers were lined and covered with plastic sheeting.

In accordance with the approved work plan, SES installed three shallow groundwater monitoring wells all to a depth of 19 feet (wells 13MW-20, 13MW-21, and the replacement well MW-18R). The wells were standard 2-inch diameter monitoring wells with flush surface completions to prevent their destruction during military exercises. SES personnel and Boart Longyear, the drilling subcontractor, installed the three wells under the direction of an SES Georgia Registered Professional Geologist.

On May 28, 2008 and May 29, 2008, direct push technology was used to apply ORC Advanced® at nine injection points at SWMU 13. The treatment thickness was 10 feet (the first 10 ft below the vadose zone) starting at an average of 20 feet bgs and injecting five pounds of ORC Advanced® per vertical foot as the drilling rods were removed from the boring, for a total of 50 pounds per injection point. Once the ORC Advanced® was applied, each application point was filled with bentonite (hole plug), and the ground surface was restored to match its surrounding terrain.

All investigation derived waste (IDW) was properly disposed in accordance with state and federal regulations.

SES has completed the IRAs at SWMU 13 in accordance with the approved work plan. Monitoring well 13MW-18 has been replaced with groundwater monitoring well 13MW-18R. A 20-foot by 20-foot excavation (11 ft to 12 ft deep) of the soil boring area of SB-15 and placement of ORC® in the excavation have been accomplished, and clean backfill has been placed in the excavation to replace the potentially contaminated soil. The three additional groundwater monitoring wells have been installed (13-MW-18R, 13-MW-21, and 13-MW-20), and ORC Advanced® has been injected at nine injection points into the soil. Groundwater monitoring to determine the adequacy of the IRAs is recommended.

In accordance with the approved work plan, at least six months after the ORC Advanced® injection at the site (in December 2008), the groundwater from nine of the groundwater monitoring wells at SWMU 13 will be sampled. The wells to be sampled are 13MW-03, 13MW-04, 13MW-10, 13MW-15, and 13MW-

16, 13MW-19 along with the three new wells 13MW-18R, 13MW-20, and 13MW-21. Each sample will be analyzed for volatile organic compounds and semivolatile organic compounds.

1. INTRODUCTION

SpecPro Environmental Services LLC (SES) under contract with the U.S. Army Corps of Engineers, Savannah District, has completed the interim remedial actions (IRAs) at Solid Waste Management Unit (SWMU) 13 within Fort Stewart, Georgia. This report provides the details of the remedial activities and field procedures that were followed during the IRAs. This work was accomplished in accordance with the approved work plan, *Final Work Plan for Interim Remedial Action and Corrective Action Progress Report at Wright Army Airfield (WAAF) Fire Training Area (SWMU 13) Fort Stewart, Georgia* (SES, March 2008), hereinafter referred to as the work plan.

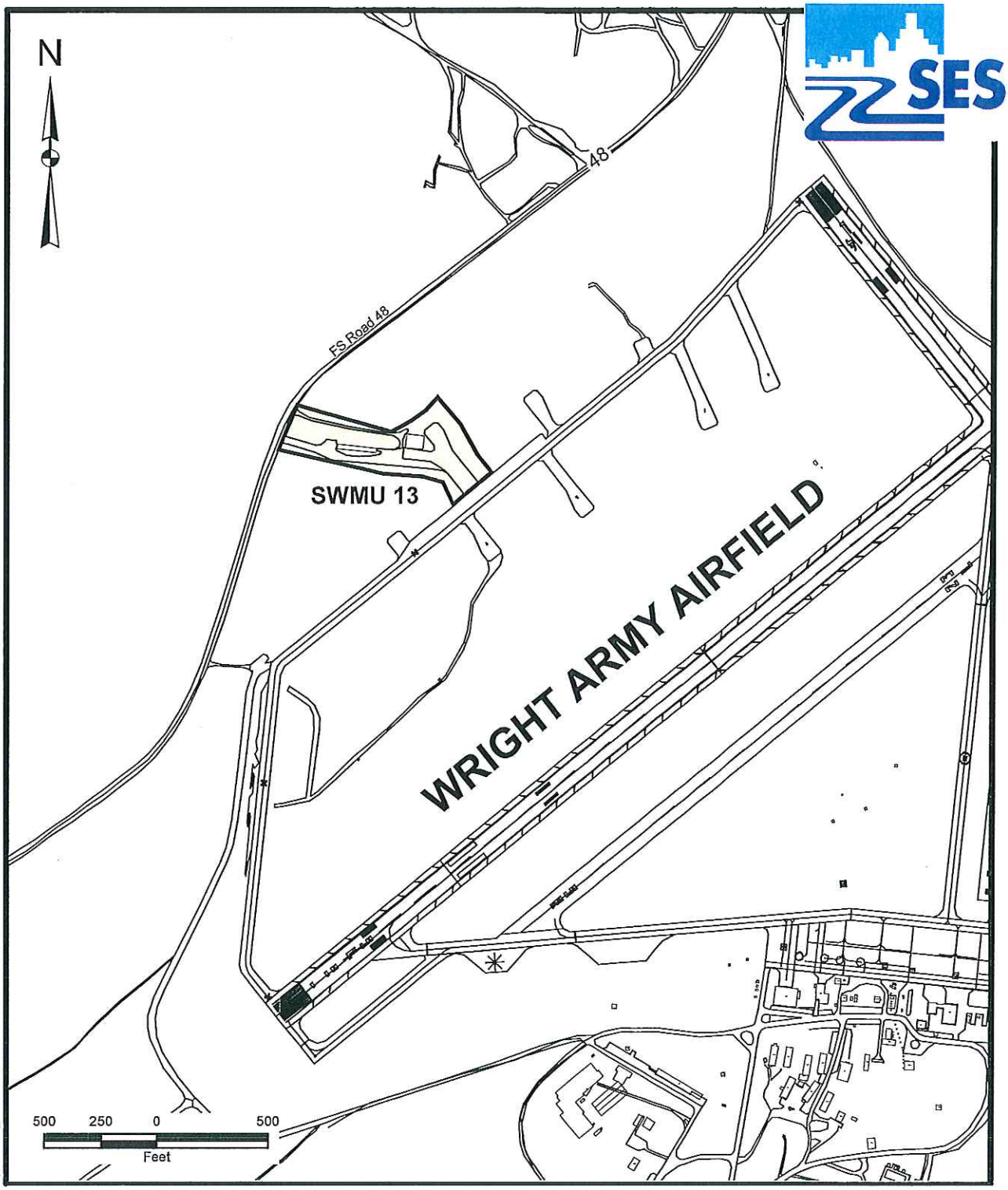
2. SITE BACKGROUND

Fort Stewart, Georgia is located in portions of Liberty, Long, Tattnall, Evans, and Bryan counties, and is approximately 40 miles southwest of Savannah, Georgia. The nearest city is Hinesville, approximately 1½ miles to the south.

SWMU 13 is located in the northwest area of Wright Army Airfield, approximately 3000 feet northwest of the control tower as shown on Figure 2-1.

3. PREVIOUS INVESTIGATIONS

Several site investigations have been conducted at SWMU 13. These investigations include a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), three supplemental investigations, an interim measure (IM), an IRA, a corrective action plan (CAP) investigation, and groundwater monitoring. Descriptions of these previous investigations are provided in the following subsections. This information was taken from *Final Corrective Action Plan, Progress Report for Calendar Year 2006, for the Former Fire Training Area at Wright Army Airfield (Solid Waste Management Unit 13) at Fort Stewart Military Reservation, Fort Stewart, Georgia* [Science Applications International Corporation (SAIC), February 2007].



LEGEND

Road / Trail

Approximate Boundary of the SWMU

Interim Remedial Action and Corrective Action Progress Report at WAAF Fire Training Area (SWMU 13) Fort Stewart, Georgia

Figure 2-1 Location of the Former Fire Training Area (SWMU 13)

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3.1 RCRA FACILITY INVESTIGATION

Earth Tech, Inc. conducted an RFI at SWMU 13 in September 1999. Soil samples and groundwater samples were obtained and analyzed. The RFI concluded that contamination in surface soil was dominated by polynuclear aromatic hydrocarbon (PAH) contamination and one RCRA metal; subsurface soil was contaminated by benzene, toluene, ethylbenzene, and xylenes (BTEX), PAHs, and RCRA metals; and BTEX contamination in groundwater extended to a depth of approximately 40 ft below the water table and impacted an area approximately 150 ft wide by 300 ft long, extending from the former fire training area facilities to the south.

The following supplemental investigations were conducted at SWMU 13 to support the development of the CAP.

- Groundwater samples were collected from eight monitoring wells in December 2000 and analyzed for BTEX and PAHs. Benzene and ethylbenzene continued to exceed their respective maximum contaminant levels in the shallow aquifer near the source. The presence of benzene and the other BTEX compounds was consistent with the results of the previous sampling. The December 2000 sampling indicated that the dissolved benzene groundwater plume encompassed an area of approximately 10,992 ft^2, which was smaller than previously observed. Naphthalene continued to be detected in the groundwater and other PAHs (fluorine and phenanthrene) were also reported during the December 2000 sampling event.

- Six groundwater monitoring wells (MW-14 through MW-19) were installed by SAIC in April 2001. During well installation activities, subsurface soil samples were collected from each of the six well locations and were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). None of the VOCs or SVOCs detected in the subsurface soil samples exceeded the U.S Environmental Protection Agency (USEPA) Region 3 residential risk-based criteria.

- Groundwater samples were collected from five monitoring wells (MW-13, MW-15, MW-16, MW-18, and MW-19) during June 2002 and were analyzed for BTEX constituents. BTEX constituents were all detected at concentrations exceeding their respective USEPA Region 3 risk-based criteria for tap water.

3.2 INTERIM MEASURE

In 1997, CAPE Environmental performed a RCRA Interim Measure (IM) at SWMU 13 to remove and properly dispose of the fire training facilities, which included the aboveground storage tank, the mock aircraft with associated foundations and piping, the concrete fire training pad and cover soils, the concrete oil/water separator sump and appurtenances, sump sediments, and soil that exceeded the preliminary cleanup targets established in the project specifications. After the fire training facilities and contaminated surface soil [to approximately 4 ft below ground surface (bgs)] were removed, and confirmatory sampling was completed, the excavated area was backfilled with clean soil and seeded.

3.3 INTERIM REMEDIAL ACTION

From December 2001 through February 2002, Earth Tech, Inc. conducted an IRA at SWMU 13. The purpose of the IRA was to remove a portion of an 8-in-thick concrete pad, which covered a 20-ft by 8-ft area. The IRA also removed approximately 337 tons of soil and well MW-12. Six confirmatory soil samples were collected and were analyzed for VOCs and SVOCs. None of the detected concentrations exceeded the USEPA Region 3 residential or industrial risk-based screening levels.

3.4 CORRECTIVE ACTION PLAN

In accordance with the recommendations of the RFI, a CAP was developed for SWMU 13. The purpose of the CAP was to develop remedial levels (RLs) and to evaluate potential remedial alternatives for human health contaminants of concern (COCs) in surface soil [benzo(a)pyrene] and groundwater (benzene, ethylbenzene, 2-methylnaphthalene, and naphthalene), and for contaminant migration constituents of concern in subsurface soil (arsenic, chromium, and benzene). The CAP recommended that no remediation be performed for surface soil for benzo(a)pyrene; subsurface soil for arsenic, chromium, or benzene; or groundwater for 2-methylnaphthalene. The remedial objective for SWMU 13 was to reduce the present concentrations of the site COCs in groundwater (benzene, ethylbenzene, 2-methylnaphthalene, and naphthalene) to the RLs presented in the CAP.

3.5 ANNUAL GROUNDWATER MONITORING

Groundwater has been monitored at the site on an annual basis for calendar years 2003, 2004, 2005, 2006, and 2007, and the results have been published in annual monitoring reports.

3.6 FINAL CORRECTIVE ACTION PLAN

Subsurface soil samples were collected along the abandoned pipeline in April 2006 to determine the extent of potential remaining subsurface soil contamination that may be influencing groundwater contamination. Groundwater samples were also collected during the calendar year 2006 sampling event. The conclusions and recommendations of the final CAP Progress Report, which formed the basis for the current IRA, are presented below. Additional information can be found in *Final Corrective Action Plan, Progress Report for Calendar Year 2006, for the Former Fire Training Area at Wright Army Airfield (Solid Waste Management Unit 13) at Fort Stewart Military Reservation, Fort Stewart, Georgia* (SAIC, February 2007).

- The report concluded that residual subsurface soil contamination remaining around SB-15 seems to be contributing to petroleum contamination in groundwater at MW-18 and reducing available oxygen for natural attenuation to proceed at a reasonable rate; therefore, soil needs to be removed around the area of SB-15 to reduce its contaminant migration to groundwater and the natural attenuation time. The report recommended that the soil be excavated around SB-15, the location indicating residual soil contamination above its Georgia Soil Screening Level (GSSL). The area of contaminated soil is estimated to be approximately 20 ft by 20 ft to a depth of 15 ft (or to groundwater, whichever is less), and is primarily located in the direction (southeast) of the former area of the pipeline. Soil excavated to approximately 8 ft bgs would be set aside, analyzed, and placed back in the excavation based on soil results, which are expected to be below GSSLs. Before the excavation is backfilled, Oxygen Release Compound® (ORC®) should be placed in the bottom of the excavation. It should be noted that the addition of ORC® in the excavation would promote aerobic biological degradation.

- The report recommended installation of two new shallow monitoring wells (MW-20 and MW-21) and one new replacement well (MW-18R). MW-18R is needed to replace compromised existing monitoring well MW-18. These three new wells will be used to monitor the extent of contamination based on removal of the soil and changes in groundwater direction due to seasonal fluctuations.

- It is believed that after the removal of the residual contaminated soil in the area of SB-15, the aerobic conditions in the groundwater will rebound sufficiently to support aerobic biological degradation. However, if annual groundwater monitoring indicates continued borderline

aerobic/anaerobic conditions and continued elevated benzene conditions, then ORC® injection will be needed to promote aerobic biological degradation. The report recommended that the area downgradient of SB-15 and upgradient of MW-18 should be the focus of the ORC® injection.

- The report recommended that annual groundwater monitoring of the nine shallow monitoring wells (seven existing/replaced and two new wells) be performed. These wells [MW-3, MW-4, MW-10, MW-15, MW-16, MW-18R, MW-19, MW-20 (new), and MW-21 (new)] are located within, downgradient of, or near the contaminant plume at SWMU 13, and represent a groundwater network to monitor the characteristics and potential migration of the contaminant plume at SWMU 13. The groundwater should be sampled using low-flow techniques and analyzed for VOCs, SVOCs, and natural attenuation parameters.

4. INTERIM REMEDIAL ACTIONS

SES performed the IRAs at the SWMU 13 site from March 31, 2008 through June 3, 2008. Site activities were coordinated with the Wright Army Airfield, Operations Manager. The tasks performed included:

- abandoning well MW-18;
- excavating contaminated soil in the area of SB-15, and placing Oxygen Release Compound® (ORC®) in the excavation;
- installing three groundwater monitoring wells (13MW-18R, 13MW-20, and 13MW-21); and
- injecting Advanced Formula Oxygen Release Compound® (ORC Advanced®) into the subsurface soil at nine injection points.

Before field activities began, all excavation permits and utility clearances for the SWMU 13 site were obtained. The locations of all intrusive activities were marked on the ground using white paint, flags, or stakes. Once the site was marked, the request for utility clearance was made to the Georgia Utility Protection Center (UPC). It is noted that there were no utilities marked near the locations of intrusive activities and no utilities were encountered during any of the field activities. Photographs of the IRAs are included in Appendix A.

4.1 MONITORING WELL ABANDONMENT

On March 31, 2008, SES personnel and Boart Longyear drilling company abandoned groundwater monitoring well 13-MW-18, a one-inch diameter polyvinyl chloride well with a total depth of 13 feet.

The well was abandoned by over-drilling the well to a depth of 13 feet. Once the boring was complete and all well materials were removed from the boring, a tremie pipe was used to backfill the boring by pumping a cement/bentonite grout mixture to fill the boring from the bottom up to completely fill the hole to ground surface. The well/boring abandonment form completed by Boart Longyear is provided as Appendix B. Refer to Figure 4-1 for location of abandoned well 13-MW-18.

4.2 SOIL EXCAVATION AND ORC® PLACEMENT

In accordance with the CAP recommendations, residual contaminated soil was removed in the area of SB-15. (See the approved work plan and Figure 4-1 for the location of the excavated area.) Stakes and/or paint were used to mark a 20 ft by 20 ft square on the ground and the utility clearance was requested from the Georgia UPC. It is noted that the Georgia UPC did not mark any utilities within or near the excavation area, and no utilities were encountered. On April 8, 2008, a trackhoe was used to excavate the site. The soil encountered from 0 to 6 ft bgs was red-tan clayey sand that did not exhibit signs of petroleum contamination (discoloration or odor). This potentially clean soil was placed on plastic sheeting next to the excavation. At a depth of 6 ft bgs, dark gray sand with a petroleum odor was encountered. The stained soil was field screened using a photoionization detector, and the readings ranged from 530 parts per million (ppm) to 560 ppm. This potentially contaminated soil (from 6 ft bgs to the bottom of the excavation) was placed on plastic sheeting and segregated from the potentially clean soil. Excavation ceased when groundwater was detected at a depth of 11 to 12 feet bgs.

Once the excavation had reached groundwater, ORC® was applied to the bottom and sidewalls of the excavation. In accordance with the approved work plan, 350 pounds of ORC® was applied to provide a uniform coverage of the sidewalls and bottom of the excavation.

The potentially clean stockpile was sampled to determine whether it could be used to backfill the excavation, in accordance with the approved work plan as discussed in Section 4.6 of this report. The potentially contaminated stockpile was also sampled to determine the appropriate method of off-site disposal as discussed in Section 4.5 of this report; and this stockpile was then covered with plastic sheeting pending disposition. On April 9, 2008 the potentially contaminated soil pile was placed in six construction debris roll-off containers pending final disposition. The containers were lined and covered with plastic sheeting. Because the volume of groundwater entering the excavation presented a threat to the stability of the sidewalls, it was decided to return the potentially clean soil to the excavation and compact it using the trackhoe. This soil filled the excavation to within six feet of the ground surface and stabilized the side walls. At this point, backfilling was halted pending receipt of the soil analysis.

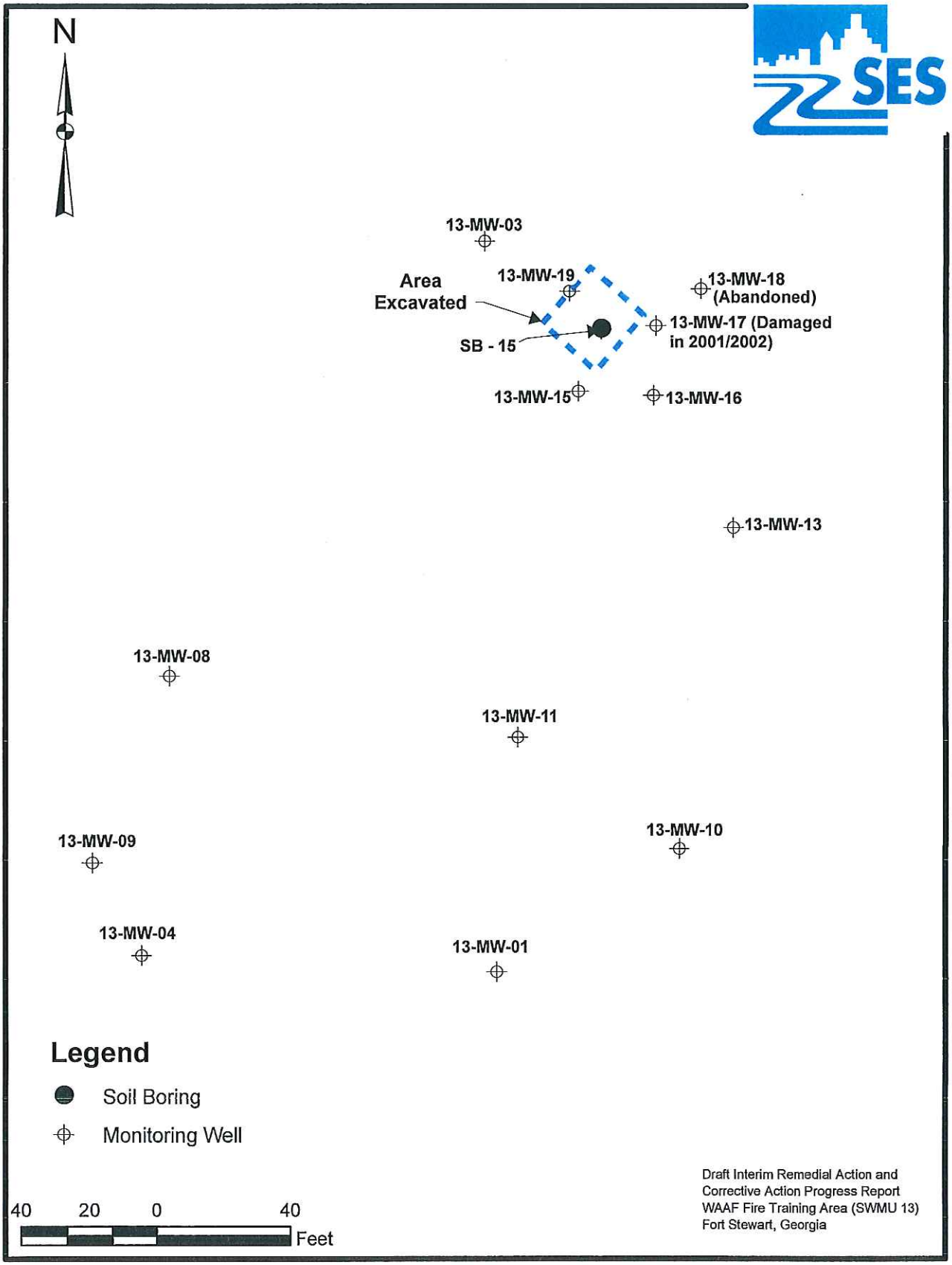

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Figure 4-1 SWMU 13 Excavation

On April 11, 2008 SES field personnel were notified that the potentially clean soil was adequate for placement back into the excavation; therefore, backfilling of the remainder of the excavation could proceed. The remaining excavation was then backfilled with soil from an off-site borrow source. The trackhoe was used to place the soil in the excavation and compact it until the soil reached a depth of four feet bgs. The remaining excavation (top four feet) was backfilled with soil from the borrow source; however, this top four feet of soil was compacted in lifts using a remote controlled trench compactor in accordance with the approved work plan. Compaction was measured by an independent testing company (Whitaker Labs) and their findings are included in Appendix C. The compaction testing showed that the required compaction was achieved.

After backfilling was complete, the site was lightly graded to blend with the surrounding terrain and the disturbed area was seeded, fertilized, and mulched to provide a ground cover of grasses.

4.3 MONITORING WELL INSTALLATIONS

SES installed three wells at the locations shown in Figure 4-2 in accordance with the approved work plan. These wells, shallow monitoring wells 13-MW-20, 13-MW-21, and the replacement well 13-MW-18R, were installed to replace the compromised existing monitoring well (13-MW-18), and to monitor the extent of contamination based on removal of the soil and changes in groundwater direction due to seasonal fluctuations. The wells were standard 2-inch diameter monitoring wells with flush surface completions to prevent their destruction during military exercises. Boart Longyear drilling company and SES personnel installed the three wells under the direction of an SES Georgia Registered Professional Geologist. Boring logs and well installation diagrams are provided in Appendix D of this report.

4.4 ORC ADVANCED® INJECTION

Advanced Formula Oxygen Release Compound® (ORC Advanced®) is a formula of calcium oxyhydroxide that produces a controlled release of oxygen for up to 12 months. Oxygen has been shown to be the limiting factor for microbes capable of aerobically degrading contaminants such as petroleum hydrocarbons. ORC Advanced® is designed in such a way that when it becomes hydrated it will release its full amount of oxygen (17 percent by weight) over a 12-month period. As a direct result, aerobic microbes are enabled to significantly accelerate rates of natural attenuation.

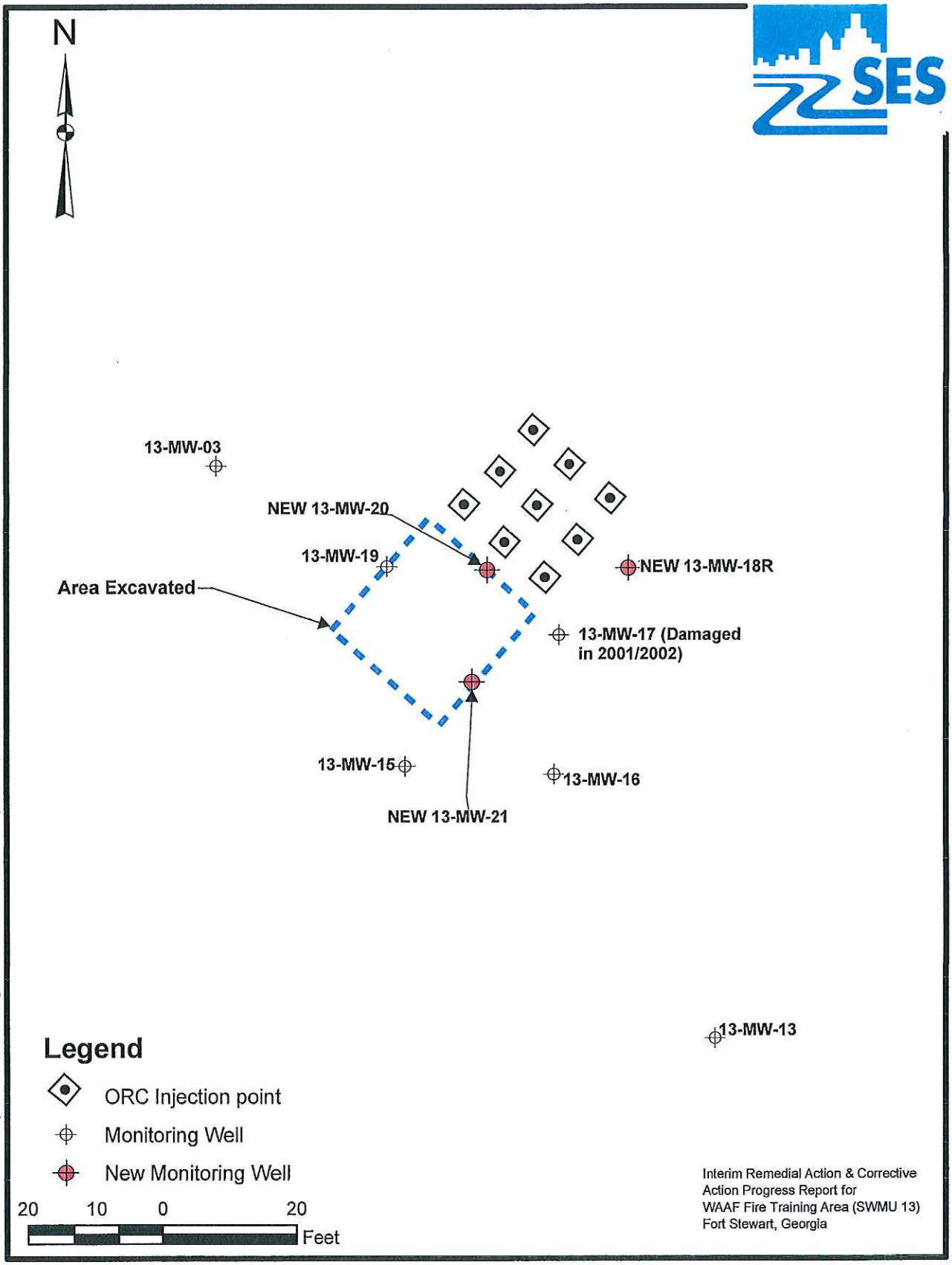

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Figure 4-2 SWMU 13 Well Installations and Area Injected with ORC®

On May 28, 2008 and May 29, 2008, direct push technology was used to apply ORC Advanced® at the nine injection point locations shown on Figure 4-2. The rate of injection required ORC Advanced® to be mixed with water to form a slurry. The mixture consisted of 50 pounds of ORC Advanced® and 14 gallons of water for each injection point. As required in the approved work plan, 450 pounds of ORC Advanced® were injected into nine injection points (on a three by three grid). The application grid and the application rates were based on the recommendations of the manufacturer (Regenesis) as stated in the approved work plan. The treatment thickness was 10 feet (the first 10 feet below the vadose zone); starting at an average of 20 ft bgs and injecting five pounds of ORC Advanced® per vertical foot as the drilling rods were removed from the boring, for a total of 50 pounds per injection point. Once the ORC Advanced® was applied, each application point was filled with bentonite (hole plug), and the ground surface was restored to match its surrounding terrain.

4.5 DISPOSAL OF INVESTIGATION DERIVED WASTE

All investigation derived waste (IDW) was properly disposed in accordance with state and federal regulations. The soil IDW was stored in six, plastic-lined, construction debris roll-off containers. The containers were covered with plastic, and each container was properly labeled. A sample was taken from each of the six containers and composited. The sample (designated as 13 TCLP) was shipped to the analytical laboratory for analyses to determine whether it was hazardous or not. It was determined the soil was not hazardous, and the analytical results were used to develop a profile of the waste. The waste profile was submitted to Waste Management for their approval to accept the waste. Once approved, Profile 101126GA was assigned to the waste. The waste containers were manifested by the Directorate of Public Works personnel, transported to Superior Landfill in Savannah, Georgia, and disposed. (Copies of the waste profile, waste characterization data, and manifests are provided in Appendix E.)

The liquid IDW (water) collected was sampled (Sample 210-43-11R) and characterized for disposal. (Copies of the water sample characterization analyses are included in Appendix E.) The water was characterized and found to be acceptable for disposal at the Industrial Wastewater Treatment plant at Fort Stewart; therefore, it was transported to and disposed at this facility.

4.6 SAMPLING EFFORTS

As stated previously, a composite sample of the potentially clean soil pile was obtained to characterize this soil for re-use as backfill. The sample was shipped to Empirical Laboratory in Nashville, Tennessee

for analysis on an expedited basis. The sample was analyzed for BTEX, PAHs, total petroleum hydrocarbons (TPH) gasoline range organics and TPH diesel range organics. It is noted that no analyte was found with a concentration exceeding the Georgia Estimated Laboratory Detection Limit found in GUST-9 (GA DNR, November 2006) and listed in Table 4-1.

Table 4-1 Analytical Results for Soil

Analyte	Sample 13 SS01 Concentration	GUST Estimated Laboratory Detection Limits[1]	GA STL[2]
BTEX			
Benzene	5 U	5 µg/kg	8
Toluene	5 U	5 µg/kg	6,000
Ethylbenzene	5 U	5 µg/kg	10,000
Xylenes (total)	5 U	5 µg/kg	700,000
PAHs			
Acenaphthene	56 U	660 µg/kg	NL
Acenaphthylene	56 U	660 µg/kg	NL
Anthracene	56 U	660 µg/kg	NL
Benzo (a) anthracene	56 U	660 µg/kg	NL
Benzo (b) fluoranthene	56 U	660 µg/kg	NL
Benzo (k) fluoranthene	56 U	660 µg/kg	NL
Benzo (g,h,i) perylene	56 U	660 µg/kg	NL
Benzo (a) pyrene	56 U	660 µg/kg	NL
Chrysene	56 U	660 µg/kg	NL
Dibenz (a,h) anthracene	56 U	660 µg/kg	NL
Fluoranthene	56 U	660 µg/kg	NL
Fluorene	56 U	660 µg/kg	NL
Indeno (1,2,3-cd) pyrene	56 U	660 µg/kg	NL
Naphthalene	56 U	660 µg/kg	NL
Phenanthrene	56 U	660 µg/kg	NL
Pyrene	56 U	660 µg/kg	NL
TPH Gasoline Range Organics	4.8 U	10 mg/kg	NL
TPH Diesel Range Organics	4.5 U	10 mg/kg	NL

[1]Estimated laboratory detection limits are from Table 2, "Laboratory Estimated Quantitation Limits for Soil and Groundwater Samples" of GUST-9 (GA DNR, November 2006)

[2]Soil threshold levels from Table A, Column 2 (Average or Higher Groundwater Pollution Susceptibility Area) of Rules of Georgia Department of Natural Resources Environmental Protection Division, Chapter 391-3-15—Underground Storage Tank Management, Section 391-3-15.09, "Release Response and Corrective Action for UST Systems Containing Petroleum, Amended." (GA DNR, October 2001)

BTEX = benzene, toluene, ethylbenzene, and xylenes
DNR = Department of Natural Resources
GA = Georgia
GUST = Georgia Underground Storage Tank (regulations)
NL = not listed
PAH = polynuclear aromatic hydrocarbons
STL = soil threshold levels
TPH = total petroleum hydrocarbons
U = not detected at method detection limit shown

5. CONCLUSIONS

The IRAs at SWMU 13 have been completed in accordance with the approved work plan. Monitoring well 13-MW-18 has been replaced with groundwater monitoring well 13-MW-18R. Excavation of the area at SB-15 and placement of ORC® in the excavation has been accomplished, and clean backfill has been placed in the excavation to replace the potentially contaminated soil. Additional groundwater monitoring wells have been installed, and ORC® has been injected into the soil. Groundwater monitoring to determine the adequacy of the IRAs is recommended. In accordance with the approved work plan, at least six months after the ORC® injection at the site, the groundwater from nine of the groundwater monitoring wells will be sampled. This is anticipated to occur in December, 2008. The wells to be sampled are 13MW-03, 13MW-04, 13MW-10, 13MW-15, 13MW-16, 13MW-19 and the three new wells 13MW-18R, 13MW-20, and 13MW-21. Each of the groundwater samples will be analyzed for VOCs and SVOCs.

6. REFERENCES

GA DNR (Georgia Department of Natural Resources), October 2001. *Rules of Georgia Department of Natural Resources Environmental Protection Division, Chapter 391-3-15—Underground Storage Tank Management, Section 391-3-15.09, "Release Response and Corrective Action for UST Systems Containing Petroleum, Amended."*

GA DNR, November 2006. *Underground Storage Tank (UST) Closure Guidance Document, Petroleum Releases.*

SAIC (Science Applications International Corporation), February 2007. *Final Corrective Action Plan, Progress Report for Calendar Year 2006, for the Former Fire Training Area at Wright Army Airfield (Solid Waste Management Unit 13) at Fort Stewart Military Reservation, Fort Stewart, Georgia.*

SES (SpecPro Environmental Services LLC), March 2008. *Final Work Plan for Interim Remedial Action and Corrective Action Progress Report at Wright Army Airfield (WAAF) Fire Training Area (SWMU 13) Fort Stewart, Georgia.*

APPENDIX A

Photographs

SWMU 13 Site

Site marked for excavation

Begin excavating

SWMU 13 Site

Potentially contaminated soil placed on plastic

ORC® applied to sides and bottom of excavation

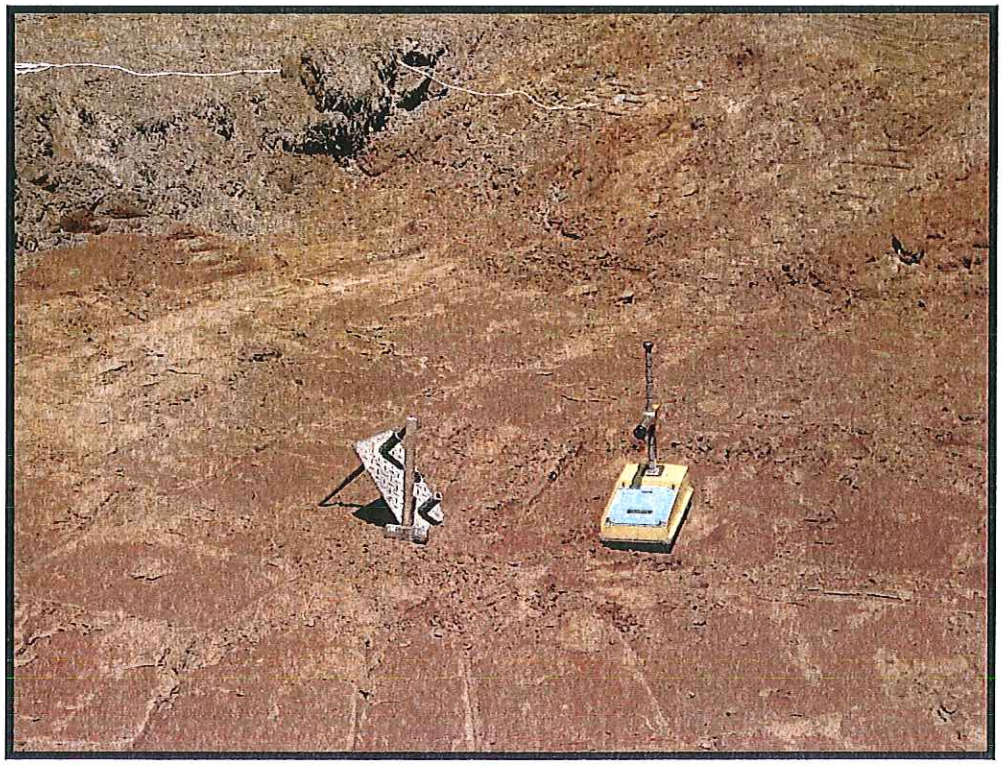
SWMU 13 Site

Excavated soil covered with plastic

Contaminated soil ready for transport

SWMU 13 Site

Compacting backfill in lifts



Compaction test

SWMU 13 Site

Site restored

Site staked for new wells and ORC® injection

APPENDIX B

Well Abandonment Form
Well 13MW-18

BOART LONGYEAR

WELL/BORING ABANDONMENT FORM

CLIENT: SES

LOCATION: SWMU-13

JOB NO.: 3436-0007

WELL/BORING NO.: MW-18

CHIEF: Greeting

REASON FOR ABANDONMENT: _____

DATE OF ABANDONMENT: 3-31-08

Construction Type: Drilled ✓ Driven ___ Other _____

Formation Type: Unconsolidated ✓ Bedrock ___

Sealing Method: Gravity ___ Pumped ✓ Other _____

Sealing Materials: Bentonite Chips ___ Cement-Bent. ✓ Other ___

SEALING MATERIAL	FROM (FT.)	TO (FT.)	# BAGS OR VOLUME
Cement Bent.	15	0	3 bgs

WELL INFORMATION ONLY

Total Well Depth: 13 Screen Removed? NO

Casing Diameter: 1 Overdrilled? yes

Casing Depth: 13 Casing Pulled? NO

Depth to Water: _____ Cut Below Surface? yes

SUPPLIES USED:

HOLEPLUG	GROUT	OTHER
bags	gal. 20	

APPENDIX C

Compaction Test Report

WHITAKER LABORATORY, INC.
P.O. Box 7078 2500 Tremont Road Savannah, Georgia 31418
(912) 234-0696 Fax (912) 233-5061 Email: info@whitakerlab.net
www.whitakerlab.net

Report No.: 4-11-08-74
Client: Hodges Brothers
Project: Dennis Waters Pit
Walthourville, GA

Attached are the results of the classification test performed on one (1) sample of proposed fill material obtained by Ralph Perez on 4-10-08.

In general, with proper moisture conditioning, this (SM) soil would be considered suitable within most project specifications.

We thank you for the opportunity to be of service on this project. We appreciate your trust and look forward to a continuing relationship in the future. If you should have any questions, please do not hesitate to contact our office.

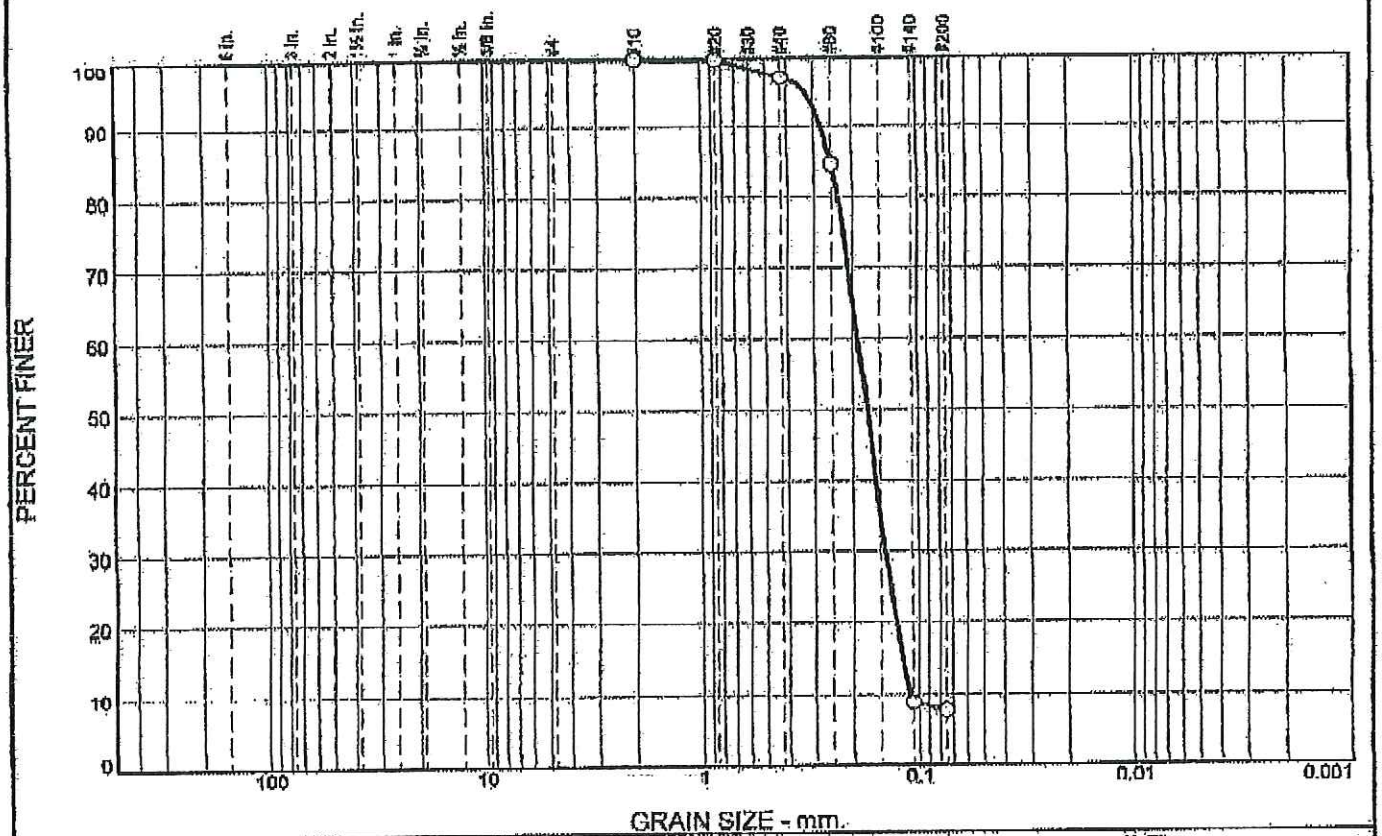
Respectfully submitted,

WHITAKER LABORATORY, INC.

Joseph F. Whitaker, P.E.

1 cc: Hodges Brothers
1 cc: File

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	3.1	89.3	7.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	96.9		
#60	84.6		
#140	8.8		
#200	7.6		

* (no specification provided)

Material Description

Tan Fine Hard Pan Sand

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS= SP-SM AASHTO=

Coefficients

D_{85}= 0.2518 D_{60}= 0.1893 D_{50}= 0.1724
D_{30}= 0.1424 D_{15}= 0.1192 D_{10}= 0.1092
C_u= 1.73 C_c= 0.98

Date Tested: Tested By:

Remarks

Sampled by: Ralph Perez

Sample No.: 1 **Source of Sample:** Pit Sample **Date Sampled:** 4/10/08
Location: Dennis Waters Pit, Walthourville, Ga. **Elev./Depth:**
Checked By: **Title:**

WHITAKER LABORATORY, INC.

Client: Hodges Brothers
Project: Pit Sample
Project No: **Report No.** 4/11/08-104

COMPACTION TEST REPORT

Curve No.: 1

Project No.: **Date:** 4/10/08

Project: Pit Sample
Client: Hodges Brothers
Location: Dennis Waters Pit, Walthourville, Ga.
Sample Number: 1
Remarks: Sampled by: Ralph Perez

MATERIAL DESCRIPTION

Description: Tan Fine Hard Pan Sand

Classifications - **USCS:** SP-SM **AASHTO:**
Nat. Moist. =
Liquid Limit =
Sp.G. =
Plasticity Index =
% < No.200 = 7.6 %

TEST RESULTS
Maximum dry density = 96.9 pcf
Optimum moisture = 15.7 %

Report 4/11/08-103

WHITAKER LABORATORY, INC.

WHITAKER LABORATORY, INC.
2500 Tremont Road - Savannah, GA - 31405
Phone (912) 234-0696 - Fax (912) 233-5061

FIELD DENSITY REPORT

Report #: 4/15/08-66

Date of Test(s): 4/14/2008

Client: Hodges Brothers

Test Performed by: Ralph Perez

Project: SMMU 13 Site Wright Army Airfield, Ft. Stewart, GA

Test Methods Used (underline all that apply)

ASTM-D-698, ASTM-D-1557, **ASTM-D-4959**, ASTM-D-2216, ASTM-D-1556, **ASTM-D-2922**

Test Number	% Moisture	% Optimum Moisture	Wet Density (PCF)	Dry Density (PCF)	Proctor (PCF)	% Compaction	% Required Compaction	Pass or Fail	Depth of Test (Inches)	Elevation of Test (ft. **BFSG)
1	13.1	15.7	106.0	93.7	96.9	96.7	95.0	Pass	0-6"	0-FSG
	Test Location: *SMMU 13 - Contamination Clean Up Area , Center of Excavation - Subgrade*									

Remarks: No on-site sketch available

Compaction and penetrometer tests reflect only the condition of the materials at the depth and location specified. These tests alone are not a substitute for an engineered geotechnical investigation and report, which can provide information on underlying soil conditions that can adversely affect support of structures and/or pavements.

cc: Hodges Brothers

WHITAKER LABORATORY, INC.

Joseph F. Whitaker, P.E.

WHITAKER LABORATORY, INC.
2500 Tremont Road - Savannah, GA - 31405
Phone (912) 234-0696 - Fax (912) 233-5061

FIELD DENSITY REPORT

Report #: 4/15/08-87

Date of Test(s): 4/11/2008

Client: Hodges Brothers

Test Performed by: Ralph Perez

Project: SMMU 13 Site Wright Army Airfield, FT. Stewart, GA

Test Methods Used (underline all that apply)

ASTM-D-698, ASTM-D-1557, **ASTM-D-4959**, ASTM-D-2216, ASTM-D-1556, **ASTM-D-2922**

Test Number	% Moisture	% Optimum Moisture	Wet Density (PCF)	Dry Density (PCF)	Proctor (PCF)	% Compaction	% Required Compaction	Pass or Fail	Depth of Test (inches)	Elevation of Test (ft. **BFSG)
1	13.9	15.7	108.2	95.0	96.9	98.0	95.0	Pass	0-6"	4-FSG
	Test Location: *SMMU 13 - Contamination Clean Up Area, Center of Excavation - Subgrade*									

Remarks: No on-site sketch available

Compaction and penetrometer tests reflect only the condition of the materials at the depth and location specified. These tests alone are not a substitute for an engineered geotechnical investigation and report, which can provide information on underlying soil conditions that can adversely affect support of structures and/or pavements.

cc: Hodges Brothers

WHITAKER LABORATORY, INC.

Joseph F. Whitaker, P.E.

APPENDIX D

Boring Logs and Well Installation Diagrams

SpecPro Environmental Services LLC
1006 Floyd Culler Court
Oak Ridge, Tennessee 37830
(865)481-7837

Well No. ~~MW-0~~ KW
13-MW-18R

DRILLING LOG

CLIENT _____ LOCATION Ft Stewart

LOGGED BY: Leann McNeal PROOFED BY: _____

DRILLING COMPANY: Boart Longyear

DRILLER: Wade Allen HELPER: Chris Rushmeyer

COORDINATES(IF AVAILABLE)
N _____
E _____
ELEV. GROUND _____
ELEVATION MEASURING POINT _____

DRILLING DATES:
STARTED: 5/29/08
FINISHED: 5/29/08
TIME: 1630

CLASSIFICATIION OF MATERIALS (Description)	% RECOVERY	REMARKS
0'-4' → yellowish brown, 10YR 5/8 sandy clay, low plasticity, no odor, damp, 60%-clay 40%-sand, soft red 2.5 YR 5/8 mottles	2.5/4	
4'-8' → light reddish grey 2.5YR 7/1 sandy clay, low plasticity, odor at 7.5-8, damp, 75%-clay, 25%-sand, medium stiff red 2.5 YR 4/8 from 6.5-8	4/4	
8'-12' → 2.5 YR 4/8 red sandy clay, 75%-clay 25%-sand, low plasticity, damp, medium stiff, odor at 8'-9', ~~SE~~ wet sand at 11'	4/4	
12'-16' → SAA, to 13.5 14' is strong brown 7.5YR 5/8 sandy clay, no odor moist, stiff, low plasticity, 60%-clay, 40%-sand 14'-16' is clayey sand, no odor wet, soft 80%-sand, 20%-clay	4/4	
16'-20 - SAA		

NOT TO SCALE

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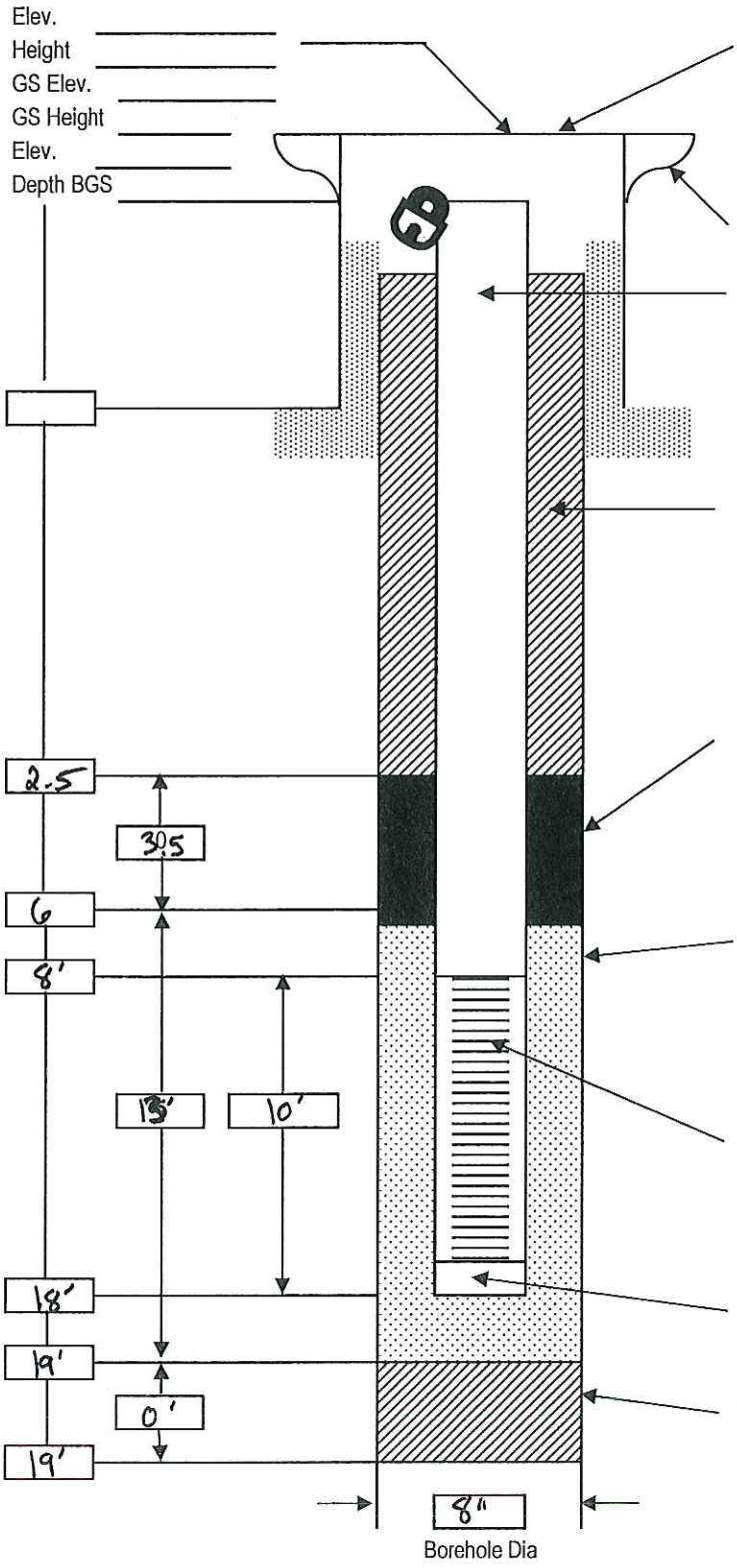
05/22/08

MONITORING WELL CONSTRUCTION LOG - Standard Flush Mount

Well No.: 13-MW-18R	Installation: Ft Stewart	Site: SWMU 13
Project No.: E0138.0003	Client/Project:	
Contractor:	Drilling Contractor: Boart Longyear	
Start Date: 5/30/08	End Date 5/31/08	Time: 1130
Built By: Wade Allen	Well Coordinates: N:	E:



PROTECTIVE CASING
Material/Type
Diameter
Watertight O-Ring ☑ Yes ☐ No
Breathes with Vadose Zone ☐ Yes ☑ No

SURFACE PAD
Composition & Size 4 40lb bags concrete

RISER PIPE
Type Schedule 40 PVC
Diameter 2"
Total Length (TOC to TOS) 0'-18'
Ventilated Cap ☐ Yes ☐ No
O-Rings for Threads ☐ Yes ☐ No

GROUT
Composition & Amount N/A
Tremied ☐ Yes ☐ No
Interval BGS N/A

CENTRALIZERS ☐ Yes ☑ No
Depth(s) N/A

SEAL
Type bentonite
Source Enviroplug medium
Setup/Hydration Time N/A
Volume Fluid Added
Tremied ☐ Yes ☑ No

FILTER PACK
Type Filter Sand #1
Amount Used 4.2 or 6 bags
Tremied ☐ Yes ☑ No
Source DSJ
Gr. Size Dist #1

SCREEN
Type Schedule 40 PVC
Diameter 2"
Slot Size 0.010
Interval BGS 8'-18'

SUMP
Interval BGS N/A
Type of Bottom Cap N/A

BACKFILL PLUG
Material N/A
Setup/Hydration Time N/A
Tremied ☐ Yes ☐ No

SpecPro Environmental Services LLC
1006 Floyd Culler Court
Oak Ridge, Tennessee 37830
(865)481-7837

Well No. ~~MW-0~~ KW
13-MW-20

DRILLING LOG

CLIENT _____ LOCATION Ft Stewart
LOGGED BY: Leann McNeal PROOFED BY: _____

DRILLING COMPANY: Boart Longyear

DRILLER: Wade Allen HELPER: Chris Rushmeyer

COORDINATES(IF AVAILABLE)
N _____
E _____
ELEV. GROUND _____
ELEVATION MEASURING POINT _____

DRILLING DATES:
STARTED: 5/30/08
FINISHED: 5/30/08
TIME: 0835

CLASSIFICATIION OF MATERIALS (Description)	% RECOVERY	REMARKS
0-1 → strong brown 7.5YR 5/6 sand, no odor, nonplastic subangular, poorly graded 100% sand, soft, dry	3/4	PID=0.0
1'-2' → dark brown 7.5YR 3/3, no odor, nonplastic, subangular, poorly graded, 100% sand, soft, dry, fine grained		
2'-4' → reddish yellow 7.5YR 7/6, sandy clay, no odor, low plasticity, damp, medium stiff, 75% clay, 25% sand		
~~4-8'~~ KW 4-5.5 → pale brown 10YR 6/3 sand, nonplastic, no odor, subangular, poorly graded 100% sand soft, damp fine grained	4/4	PID=729
5.5-8 → red 10R 5/8 with white mottles sandy clay, low plasticity, no odor, medium stiff, damp 70% clay, 30% sand		
~~4/4~~ KW		
8'-12' → SAA	4/4	PID=15.2
12'-16' →	4/4	PID=57.4
16'-20' → 16-17 SAA	4/4	PID=1.8
17-18' → reddish yellow 7.5YR 7/8 sand, coarse grained, wet, no odor, poorly graded, 100% sand		
18-20' → white 7.5YR clayey sand fine grained, subangular, poorly sorted, no odor, wet, soft, 80% sand 20% clay		

NOT TO SCALE

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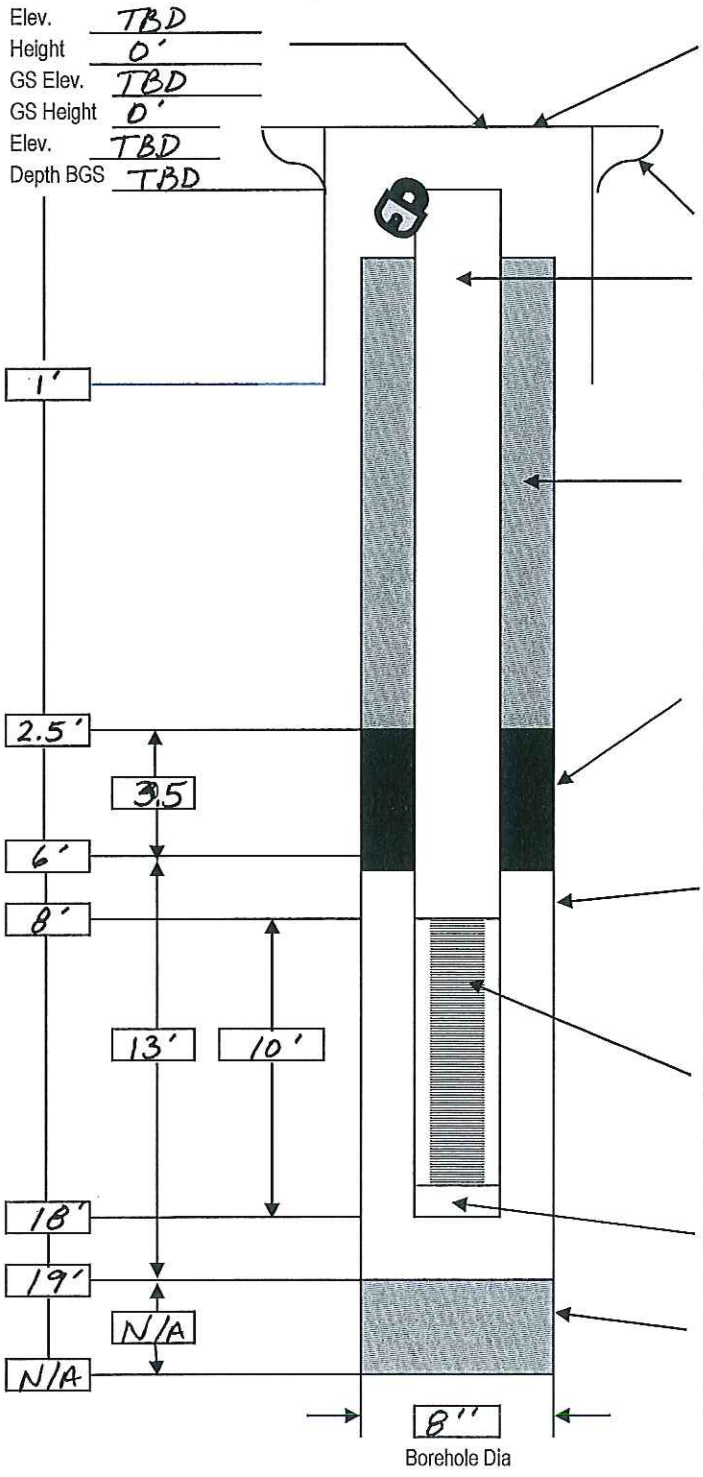
05/22/08

MONITORING WELL CONSTRUCTION LOG - Standard Flush Mount

Well No.: 13-MW-20	Installation: Fort Stewart	Site: SWMU 13
Project No.: E0138.0003	Client/Project: US Army Corps of Engineers	
Contractor: SpecPro Environmental Services LLC	Drilling Contractor: Boart Longyear	
Start Date: 5/30/08	End Date 5/30/08 Time: 1450	
Built By: Wade Allen	Well Coordinates: N: TBD E: TBD	



PROTECTIVE CASING
Material/Type: STEEL
Diameter: 8"
Watertight O-Ring: ☒ Yes ☐ No
Breathes with Vadose Zone: ☐ Yes ☒ No

SURFACE PAD
Composition & Size: 2'x2' CONCRETE

RISER PIPE
Type: SCHEDULE 40
Diameter: 2"
Total Length (TOC to TOS): 6'
Ventilated Cap: ☐ Yes ☒ No
O-Rings for Threads: ☒ Yes ☐ No

GROUT
Composition & Amount: NO GROUT, BENTONITE MEETS CONCRETE PAD
Tremied: ☐ Yes ☒ No
Interval BGS: N/A

CENTRALIZERS: ☐ Yes ☒ No
Depth(s): N/A

SEAL
Type: BENTONITE
Source: WYO-BEN, INC, ENVIROPLUG MEDIUM
Setup/Hydration Time: 24 HOURS
Volume Fluid Added: PELLETS
Tremied: ☐ Yes ☒ No

FILTER PACK
Type: DSI #1 FILTER SAND
Amount Used: 3ft³
Tremied: ☐ Yes ☒ No
Source: DSI
Gr. Size Dist: #1

SCREEN
Type: SCHEDULE 40 PVC
Diameter: 2"
Slot Size: .010" FACTORY SLOT
Interval BGS: 8'-18'

SUMP
Interval BGS: N/A
Type of Bottom Cap: N/A

BACKFILL PLUG
Material: N/A
Setup/Hydration Time: N/A
Tremied: ☐ Yes ☐ No

SpecPro Environmental Services LLC
1006 Floyd Culler Court
Oak Ridge, Tennessee 37830
(865)481-7837

Well No. MW-0
13-MW-21

DRILLING LOG

CLIENT _____ LOCATION Ft Stewart

LOGGED BY: L PROOFED BY: _____

DRILLING COMPANY: Boart Longyear

DRILLER: Wade Allen HELPER: Chris Ruchmeyer

COORDINATES(IF AVAILABLE)
N _____
E _____
ELEV. GROUND _____
ELEVATION MEASURING POINT _____

DRILLING DATES:
STARTED: 5/30/08
FINISHED: 5/30/08
TIME: 0915

CLASSIFICATIION OF MATERIALS (Description)	% RECOVERY	REMARKS
0-4' → dark brown 7.5 YR 3/3, Fine grained sand, nonplastic, no odor, dry, soft, subangular, poorly graded 100% sand	3/4	PID = 0.0
4-8 → 4-5.5 → SAA 5.5-8 → pale brown 10YR, 6/3 sand, fine grained, no odor, damp, soft, nonplastic, 100% sand, subangular to angular, poorly graded	3/4	PID = 4.1
8'-12' → 8'-9' → SAA	2/4	PID = 0.4
9'-12' → granite gravel fill material, wet 12'-16' - 12'-13.5' → SAA	3.5/4	PID = 6.4
13.5'-16' → white 10 R 8/1 fine grained, clayey sand, low plasticity, no odor, wet subangular, poorly graded, soft, yellow 10YR 7/8 mottles throughout		
16-20 → SAA, no mottles, no odor	2/4	PID = 0.0

NOT TO SCALE

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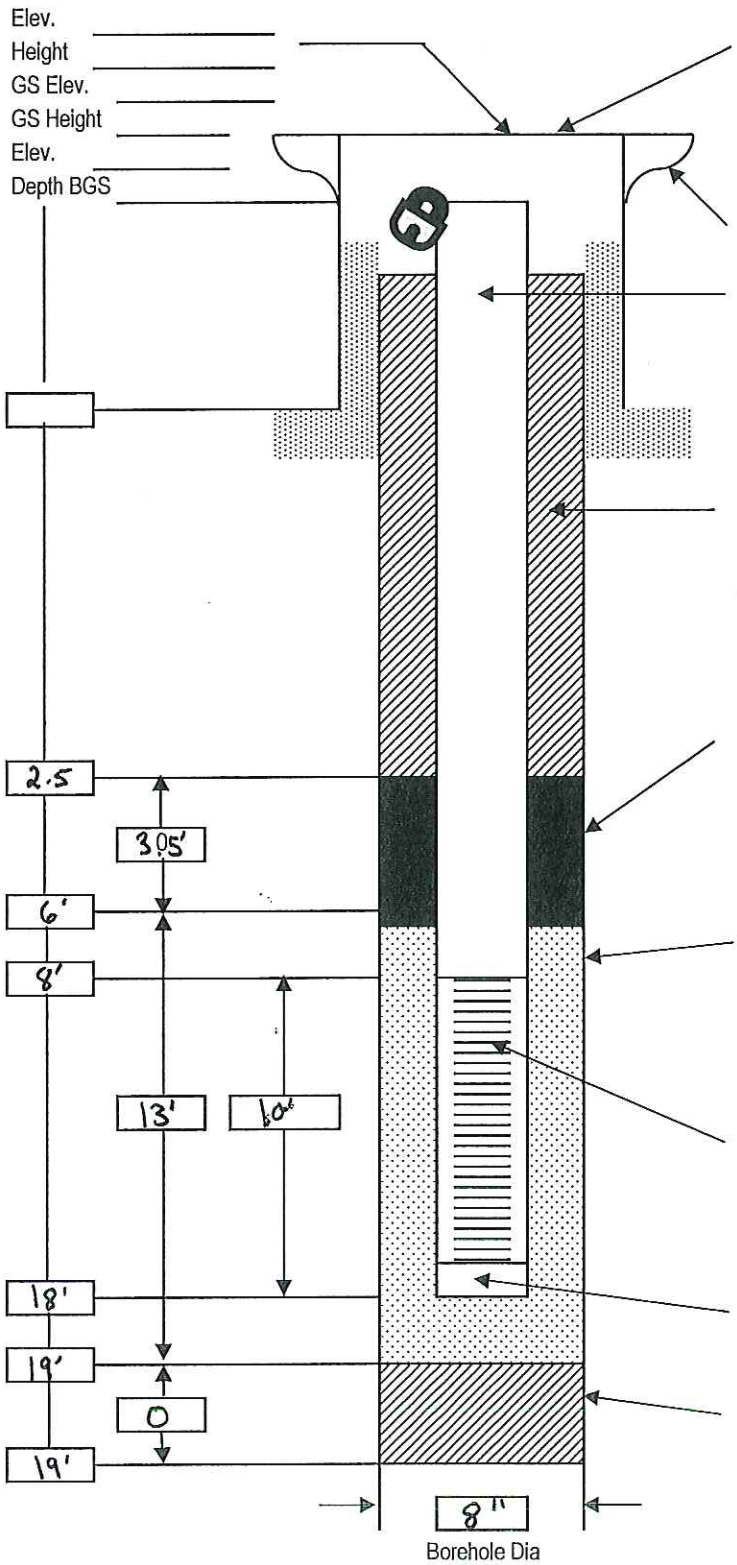
05/22/08

MONITORING WELL CONSTRUCTION LOG - Standard Flush Mount

Well No.: 13-MW-21	Installation: Ft Stewart	Site: SWMU 13
Project No.: E0138.0003	Client/Project:	
Contractor:	Drilling Contractor: Boart Longyear	
Start Date: 5/31/08	End Date 5/31/08	Time: 1130
Built By: Wade Allen	Well Coordinates: N:	E:



PROTECTIVE CASING
Material/Type
Diameter
Watertight O-Ring ☑ Yes ☐ No
Breathes with Vadose Zone ☐ Yes ☑ No

SURFACE PAD
Composition & Size concrete

RISER PIPE
Type Schedule 40 PVC
Diameter 2"
Total Length (TOC to TOS) 0'-18'
Ventilated Cap ☐ Yes ☐ No
O-Rings for Threads ☐ Yes ☐ No

GROUT
Composition & Amount N/A
Tremied ☐ Yes ☐ No
Interval BGS N/A

CENTRALIZERS ☐ Yes ☑ No
Depth(s) N/A

SEAL
Type bentonite
Source Enviroplug medium
Setup/Hydration Time N/A
Volume Fluid Added
Tremied ☐ Yes ☑ No

FILTER PACK
Type #1 Filter Sand
Amount Used 6 bags
Tremied ☐ Yes ☑ No
Source DSI
Gr. Size Dist #1

SCREEN
Type Schedule 40 PVC
Diameter 2"
Slot Size 0.010
Interval BGS 8'-18'

SUMP
Interval BGS N/A
Type of Bottom Cap N/A

BACKFILL PLUG
Material N/A
Setup/Hydration Time N/A
Tremied ☐ Yes ☐ No

APPENDIX E

Waste Characterization and Waste Manifests

Generator's Nonhazardous Waste Profile S

101126GA

WASTE MANAGEMENT

Requested Disposal Facility SUPERIOR Profile Numb

☐ Renewal for Profile Number _____ Waste Approval Expiration Date _____

A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: US Army Fort Stewart
2. Site Address: 1550 Frank Cochran Drive
3. City/ZIP: Fort Stewart / 31314-4927
4. State: Georgia
5. County: Liberty
6. Contact Name/Title: Randy Powell Jones/Env. Spec
7. Email Address: Randy.Powell.Jones@Stewart.Army.mil
8. Phone: 912-315-5109 9. FAX: 912-315-5148
10. NAICS Code: _____
11. Generator USEPA ID #: GA9210020872
12. State ID# (if applicable): _____

B. Customer Information ☐ same as above

P. O. Number: _____

1. Customer Name: Atlantic Waste Services
2. Billing Address: 125 B Pine Meadow Drive
3. City, State and ZIP: Pooler, GA 31322
4. Contact Name: Theresa Curtis
5. Contact Email: _____
6. Phone: 912-964-2000 FAX: 912-964-2008
7. Transporter Name: Atlantic Waste Services
8. Transporter ID # (if appl.): _____
9. Transporter Address: 125 B Pine Meadow Drive
10. City, State and ZIP: Pooler GA 31322

C. Waste Stream Information

1. DESCRIPTION Diesel Fuel Contaminated Soil

a. Common Waste Name: and Clean-up Debris State Waste Code(s): _____

b. Describe Process Generating Waste or Source of Contamination:

Soil Contaminated with diesel fuel from a product spill or leaking UST or minor spills experienced during fuel transfers. Site Cleanup generated materials.

c. Typical Color(s): Gray / Brown / Black sandy soil

d. Strong Odor? ☐ Yes ☑ No Describe: Diesel Fuel

e. Physical State at 70°F: ☑ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: _____

f. Layers? ☐ Single layer ☐ Multi- layer ☑ NA

g. Water Reactive? ☐ Yes ☑ No If Yes, Describe: _____

h. Free Liquid Range (%): _____ to _____ ☑ NA(solid)

i. pH Range: ☐ ≤2 ☐ 2.1-12.4 ☐ ≥12.5 ☑ NA(solid) ☐ Actual: _____

j. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☑ NA(solid) ☐ Actual: _____

k. Flammable Solid: ☐ Yes ☑ No

l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

Constituents *(Total Composition Must be ≥ 100%)*	Concentration %	Constituents *(Total Composition Must be ≥ 100%)*	Concentration %
1. soil	90-100	4. ancillary debris-wood/plastic	1-5
2. absorbants	0-10	5.	
3. diesel fuel	1-10	6.	

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION

a. ☑ Event ☐ Base/Ongoing (Check One)

b. Estimated Annual Quantity: 240 ☐ Tons ☑ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify): _____

c. Shipping Frequency: _____ Units per ☐ Month ☐ Quarter ☐ Year ☑ One Time ☐ Other

d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☑ No

e. USDOT Shipping Description (if applicable): _____

3. SAFETY REQUIREMENTS (Handling, PPE, etc.): Normal Landfill site personal protective equipment

Generator's Nonhazardous Waste Profile Sheet

D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☑ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☑ No
   - ☐ Delisted Hazardous Waste
   - ☐ Excluded Wastes Under 40 CFR 261.4
   - ☐ Treated Hazardous Waste Debris
   - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☐ Yes ☑ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☑ No
   a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☑ No
   b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☑ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☑ No
   a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☑ No
7. Does the waste contain asbestos? ☐ Yes ☑ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☑ No
   If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☐ No

E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
   - ☑ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested: Sample 208208TCLP (Full TCLP, RCI) Sample 210TCLP (Full TCLP, RCI) # Pages: 10
   - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested). Attachment #: _____.
   - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical). Indicate the number of attached pages: _____
   - ☐ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
   - ☐ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

Certification Signature: Bandy Powell-Jones Title: Environ. Prod. Spec.

Company Name: _____ Name (Print): Bandy Powell-Jones

Date: 2/April/08

FOR WM USE ONLY

Management Method: ☒ Landfill ☐ Bioremediation ☐ Non-hazardous solidification ☐ Other: _____

Approval Decision: ☒ Approved ☐ Not Approved

Waste Approval Expiration Date: 7-3-08

Management Facility Precautions, Special Handling Procedures or Limitation on approval: _____

- ☐ Shall not contain free liquid
- ☐ Shipment must be scheduled into disposal facility
- ☐ Approval Number must accompany each shipment
- ☒ Waste Manifest must accompany load

WM Authorization Name / Title: Sara Adams Date: 4-3-08

State Authorization (if Required): _____ Date: _____

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

SHIP TO: 227 French Landing Drive, Suite 550 ♦ N ville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

Send Results to:	Send Invoice to: SAME
Name DOUG HAWN	Name
Company SES LLC	Company
Address 1006 Floyd Collect	Address
City OAK RIDGE	City
State, Zip TN 37830	State, Zip
Phone 865-481-7837	Phone
Fax 865-481-0290	Fax
E-mail DHAWN@SPECPROENV.COM	E-mail
Project No./Name: SWMU 13	Sampler's (Signature): Jeff Williams

Analysis Requirements: Full TCLP, RCI

Lab Use Only:

VOA Headspace	Y	N	(NA)
Field Filtered	Y	(N)	NA
Correct Containers	(Y)	N	NA
Discrepancies	Y	(N)	NA
Cust. Seals Intact	(Y)	N	NA
Containers Intact	(Y)	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Comments	No. of Bottles	Lab Use Only Containers/Pres.
0804083-01	4-8-08/1500	13TCLP	Soil		4	4m

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)
Relinquished by: (Signature) Jeff Williams	Date/Time 4-8-08/1700	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature) EJO	Date/Time 1000 4-9-08	Temperature 3.1°C

REMARKS: CALL DOUG HAWN UPON RECEIPT

Details:

Page 1 of 1

Cooler No. 1 of 1

Date Shipped 4-8-08

Shipped By UPS

Turnaround NORMAL

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

Empirical Laboratories

CLIENT: SES, LLC
DATE RECEIVED: 04/09/08
DATE REPORTED: 04/23/08

EMPIRICAL LABORATORIES SAMPLE NUMBER						0804083-01
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE						13 TCLP 04/08/08 3:00:00 PM
ANALYTES	REGULATORY LIMITS	MDL	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	0.10	1311/6010B	mg/L	<0.030
Barium-TCLP	100	0.050	2.0	1311/6010B	mg/L	0.199 B
Cadmium-TCLP	1.0	0.010	0.050	1311/6010B	mg/L	<0.010
Chromium-TCLP	5.0	0.020	0.10	1311/6010B	mg/L	<0.020
Lead-TCLP	5.0	0.015	0.030	1311/6010B	mg/L	<0.015
Mercury-TCLP	0.20	0.00080	0.0020	1311/7470A	mg/L	<0.00080
Selenium-TCLP	1.0	0.030	0.050	1311/6010B	mg/L	<0.030
Silver-TCLP	5.0	0.010	0.10	1311/6010B	mg/L	<0.010
Initial pH - TCLP	NA	NA	NA	1311	Units	5.3
Final pH - TCLP	NA	NA	NA	1311	Units	4.9
Cyanide	250	0.13	0.25	9012A	mg/kg (as Rec'd)	<0.13
Ignitability	<140	NA	NA	1010	°F	>158
pH- Laboratory (1)	<2/>12.5	NA	NA	9045B	Units	5.4 @ 25°C
Reactive Sulfide	500	18	54	Chap.7.3.4.2	mg/kg (as Rec'd)	<18

See attached page for definitions of terms and qualifiers.

EMPIRICAL LABORATORIES

D. Rick Davis
Vice President

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 TCLP

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SES.V04083

Matrix: (soil/water) TCLP Lab Sample ID: 0804083-01

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0408301T

Level: (low/med) LOW Date Sampled: 04/08/08 15:00

% Moisture: not dec. _____ Date Analyzed: 04/15/08 23:37

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
71-43-2	Benzene	0.010	0.50	<0.010	U
78-93-3	2-Butanone	0.10	200	<0.10	U
56-23-5	Carbon tetrachloride	0.010	0.50	<0.010	U
108-90-7	Chlorobenzene	0.010	100	<0.010	U
67-66-3	Chloroform	0.010	6.0	<0.010	U
106-46-7	1,4-Dichlorobenzene	0.010	7.5	<0.010	U
107-06-2	1,2-Dichloroethane	0.010	0.50	<0.010	U
75-35-4	1,1-Dichloroethene	0.010	0.70	<0.010	U
127-18-4	Tetrachloroethene	0.010	0.70	<0.010	U
79-01-6	Trichloroethene	0.010	0.50	0.0095	J
75-01-4	Vinyl chloride	0.020	0.20	<0.020	U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 TCLP

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SES.B04083

Matrix: (soil/water) TCLP Lab Sample ID: 0804083-01

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 0408301T

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 04/08/08 15:00

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:04/11/08

Concentrated Extract Volume: 1000.0(uL) Date Analyzed: 04/14/08 16:17

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
121-14-2	2,4-Dinitrotoluene	0.050	0.13	<0.050	U
118-74-1	Hexachlorobenzene	0.050	0.13	<0.050	U
87-68-3	Hexachlorobutadiene	0.050	0.50	<0.050	U
67-72-1	Hexachloroethane	0.050	3.0	<0.050	U
108-39-4	3-Methylphenol	0.050	200	<0.050	U
106-44-5	4-Methylphenol	0.050	200	<0.050	U
95-48-7	2-Methylphenol	0.050	200	<0.050	U
98-95-3	Nitrobenzene	0.050	2.0	<0.050	U
87-86-5	Pentachlorophenol	0.20	100	<0.20	U
110-86-1	Pyridine	0.20	5.0	<0.20	U
95-95-4	2,4,5-Trichlorophenol	0.050	400	<0.050	U
88-06-2	2,4,6-Trichlorophenol	0.050	2.0	<0.050	U

FORM 1
PESTA ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 TCLP

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: EL Case No.: SAS No.: NA SDG No.: SES.P04083

Matrix: (soil/water) TCLP Lab Sample ID: 0804083-01

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 018F1901

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 04/08/08 15:00

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:04/16/08

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 04/18/08 19:00

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
57-74-9	Chlordane	0.00050	0.030	<0.00050	U
72-20-8	Endrin	0.00010	0.020	<0.00010	U
58-89-9	Gamma-BHC	0.00010	0.40	<0.00010	U
76-44-8	Heptachlor	0.00010	0.0080	<0.00010	U
1024-57-3	Heptachlor Epoxide	0.00010	0.0080	<0.00010	U
72-43-5	Methoxychlor	0.00010	10	<0.00010	U
8001-35-2	Toxaphene	0.010	0.50	<0.010	U

FORM 1
HERB ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 TCLP

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: EL Case No.: SAS No.: NA SDG No.: SES.H04083

Matrix: (soil/water) TCLP Lab Sample ID: 0804083-01

Sample wt/vol: 100.0 (g/mL) ML Lab File ID: 014F0301

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 04/08/08 15:00

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:04/16/08

Concentrated Extract Volume: 10.0(mL) Date Analyzed: 04/16/08 19:45

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	EQL	TCLP Regulatory Limit	CONC	Q
94-75-7	2,4-D	0.0050	10	<0.0050	U
93-72-1	2,4,5-TP (Silvex)	0.00050	1.0	<0.00050	U

Atlantic
waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: US Army Ft Stewart US EPA ID#: _____

Billing Address: _____

Site Address: 1550 Frank Cochran Dr. Ft. Stewart, GA 31314

County of Origin: Liberty Phone: (912) 315-5109

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Diesel Contaminated Soil	1	100366SC	30 yd	RO
		101126 CW		

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Bunny Powell-Jones Signature 1/29/08

Generator Authorized Agent Name Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services 125 B Pine Meadow Rd DOT#: _____

Address: Pooler, GA 31322 Truck Number: _____

Name of Authorized Agent Signature Date Delivered

DISPOSAL FACILITY

Site Name: Superior Landfill

Address: 3001 Little Neck Rd Savannah, GA 31322

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent Signature Date Received

White - Original Yellow - Transporter Pink - Disposal Facility Gold - Customer

atlantic
waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: USArmy Ft Stewart

US EPA ID#:

Billing Address:

Site Address: 1550 FrankCorhranDr. Ft. Stewart/GA 31314

County of Origin: Liberty

Phone: (912) 315-5109

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Desel Fuel Contaminated Soil	1	100388850	30	ROL

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Randy Powell Jones

Signature: [signature]

Date Shipped: 4/28/08

TRANSPORTER

Transporter Name: Atlantic Waste Services

DOT#: 995413

Address: 105B Pine Meadow Pooler GA 31322

Truck Number: #104

Name of Authorized Agent: David C. Briggs Jr

Signature: [signature]

Date Delivered: 28 APR 08

DISPOSAL FACILITY

Site Name: WM-Superior Landfill

Address: 3001 Little Neck Rd Sav. GA 31419

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent

Signature

Date Received

Atlantic waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: US Army Ft Stewart US EPA ID#: _____

Billing Address: _____

Site Address: 1550 Frank Cochran Dr. Ft. Stewart / GA 31314-4927

County of Origin: Liberty Phone: (912) 315-5109

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Diesel Fuel Contaminated Soil	1	10038858	30	ROL

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Trevor Powell Jones 4/28/08

Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services DOT#: _____

Address: 125 B Pine Meadow Pooler, GA 31322 Truck Number: 1

Name of Authorized Agent Signature Date Delivered

DISPOSAL FACILITY

Site Name: WM - Superior Landfill

Address: 3001 Little Neck Rd

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent Signature Date Received

White - Original Yellow - Transporter Pink - Disposal Facility Gold - Customer

Atlantic waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: USArmy Ft. Stewart US EPA ID#: _____

Billing Address: _____

Site Address: 550 Frank Cochran Dr. Ft. Stewart, GA 31314-4927

County of Origin: Liberty Phone: (912) 315-5104

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Diesel Fuel Contaminated Soil	1	1023858	30	Rol

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Bruce Powell-Jones Signature 4/28/08

Generator Authorized Agent Name Signature Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services DOT#: _____

Address: 125 B Pine Meadow Dr. Hoker GA 31322 Truck Number: 105

_____ Signature 4-28-08

Name of Authorized Agent Signature Date Delivered

DISPOSAL FACILITY

Site Name:

Address:

I hereby acknowledge receipt of the above described materials.

_____ _____

Name of Authorized Agent Signature Date Received

White - Original Yellow - Transporter Pink - Disposal Facility Gold - Customer

Atlantic waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: US Army Ft. Stewart US EPA ID#:

Billing Address:

Site Address: 1550 Frank Cochran Dr. Ft. Stewart, GA 31314

County of Origin: Liberty Phone: (912) 315-5109

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Diesel Contaminated Soil	1	100288SG	30yd	ROL

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Barry Powell Jr. — Generator Authorized Agent Name | [signature] — Signature | 4/28/08 — Date Shipped

TRANSPORTER

Transporter Name: Atlantic Waste Services 125 B Pine Meadow Rd DOT#: 995413 G.A.

Address: Pooler, GA 31322 Truck Number: 18

[illegible] — Name of Authorized Agent | [signature] — Signature | [illegible] — Date Delivered

DISPOSAL FACILITY

Site Name: Superior Landfill

Address: 3001 Little Neck Rd Savannah, GA 31322

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent | Signature | Date Received

Atlantic waste services

NON-HAZARDOUS WASTE MANIFEST

GENERATOR

Generator Name: US Army Ft Stewart

US EPA ID#:

Billing Address:

Site Address: 1550 Frank Cochran Dr Ft. Stewart, GA 31314

County of Origin: Liberty

Phone: (912) 315-5101

Description of Waste	Total Quantity	Profile Number	Unit of Measure	Container Type
Diesel Contaminated Soil	1	1003888	30	Roc

Special Handling Instructions

I hereby certify that the above described materials are non-hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Barry Powell-Jones

Signature: [signature]

Date Shipped: 4/28/08

TRANSPORTER

Transporter Name: Atlantic Waste Services

Address: 125 B Pine Meadow Rd, Pooler, GA 31322

DOT#: 995419

Truck Number: #1104

Name of Authorized Agent: [illegible]

Signature: [signature]

Date Delivered: 29 Apr 08

DISPOSAL FACILITY

Site Name: Superior Landfill

Address: 3001 Little Neck Rd, Sav GA 31419

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent

Signature

Date Received

White - Original Yellow - Transporter Pink - Disposal Facility Gold - Customer

CLIENT: SES, LLC
DATE RECEIVED: 06/06/08
DATE REPORTED: 06/24/08

EMPIRICAL LABORATORIES SAMPLE NUMBER						0806070-02
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE						SWMU-13 WW 06/04/08 1:30:00 PM
ANALYTES	USEPA METHOD	UNITS	MDL	REPORTING LIMITS	DILUTION FACTOR	CONC
Oil & Grease	1664A	mg/L	2.0	5.0	1	<2.0
pH- Laboratory (1)	SM4500H$^+$B	Units	NA	NA	1	6.0 @ 17°C
Phenolics	9065	mg/L	0.010	0.030	1	0.019 B

See attached page for definitions of terms and qualifiers.

EMPIRICAL LABORATORIES

Betty DeVille for

D. Rick Davis
Vice President

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SWMU-13 WW

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SES.V06070

Matrix: (soil/water) WATER Lab Sample ID: 0806070-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0607002

Level: (low/med) LOW Date Sampled: 06/04/08 13:30

% Moisture: not dec. _____ Date Analyzed: 06/10/08 13:59

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
67-64-1	Acetone	1.1	10	9.3	J
71-43-2	Benzene	0.11	1.0	0.24	J
75-27-4	Bromodichloromethane	0.086	1.0		U
75-25-2	Bromoform	0.24	1.0		U
74-83-9	Bromomethane	0.33	2.0		U
78-93-3	2-Butanone	1.2	10		U
75-15-0	Carbon disulfide	0.13	1.0	0.27	J
56-23-5	Carbon tetrachloride	0.14	1.0		U
108-90-7	Chlorobenzene	0.28	1.0		U
75-00-3	Chloroethane	0.38	2.0		U
67-66-3	Chloroform	0.10	1.0		U
74-87-3	Chloromethane	0.40	2.0		U
110-82-7	Cyclohexane	0.18	2.0	4.6	
124-48-1	Dibromochloromethane	0.080	1.0		U
96-12-8	1,2-Dibromo-3-chloropropane	0.28	2.0		U
106-93-4	1,2-Dibromoethane	0.070	1.0		U
95-50-1	1,2-Dichlorobenzene	0.17	1.0		U
541-73-1	1,3-Dichlorobenzene	0.21	1.0		U
106-46-7	1,4-Dichlorobenzene	0.12	1.0		U
75-71-8	Dichlorodifluoromethane	0.24	2.0		U
75-34-3	1,1-Dichloroethane	0.15	1.0		U
107-06-2	1,2-Dichloroethane	0.15	1.0		U
75-35-4	1,1-Dichloroethene	0.42	1.0		U
156-59-2	cis-1,2-Dichloroethene	0.44	1.0		U
156-60-5	trans-1,2-Dichloroethene	0.40	1.0		U
78-87-5	1,2-Dichloropropane	0.18	1.0		U
10061-01-5	cis-1,3-Dichloropropene	0.13	1.0		U
10061-02-6	trans-1,3-Dichloropropene	0.22	1.0		U
100-41-4	Ethylbenzene	0.14	1.0	15	
591-78-6	2-Hexanone	0.83	5.0		U
98-82-8	Isopropylbenzene	0.034	1.0	1.6	
79-20-9	Methyl acetate	0.87	1.0		U
75-09-2	Methylene chloride	0.26	2.0	0.73	JB
108-87-2	Methyl cyclohexane	0.20	1.0	4.4	
1634-04-4	MTBE	0.17	1.0		U
108-10-1	4-Methyl-2-pentanone	1.4	5.0		U
100-42-5	Styrene	0.22	1.0		U
79-34-5	1,1,2,2-Tetrachloroethane	0.070	1.0		U
127-18-4	Tetrachloroethene	0.14	1.0		U

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SWMU-13 WW

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SES.V06070

Matrix: (soil/water) WATER Lab Sample ID: 0806070-02

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: 0607002

Level: (low/med) LOW Date Sampled: 06/04/08 13:30

% Moisture: not dec. _____ Date Analyzed: 06/10/08 13:59

GC Column: DB-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
108-88-3	Toluene	0.18	1.0	1.0	
120-82-1	1,2,4-Trichlorobenzene	0.14	1.0		U
71-55-6	1,1,1-Trichloroethane	0.15	1.0		U
79-00-5	1,1,2-Trichloroethane	0.17	1.0		U
79-01-6	Trichloroethene	0.28	1.0		U
76-13-1	Trichlorotrifluoroethane	0.22	1.0		U
75-69-4	Trichlorofluoromethane	0.15	2.0		U
75-01-4	Vinyl chloride	0.19	2.0		U
1330-20-7	Xylene(total)	0.21	1.0	65	

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

SWMU-13 WW

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SES.B06070

Matrix: (soil/water) WATER Lab Sample ID: 0806070-02

Sample wt/vol: 1040 (g/mL) ML Lab File ID: 0607002

% Moisture: _____ decanted: (Y/N)___ Date Sampled: 06/04/08 13:30

Extraction: (SepF/Cont/Sonc/Soxh) SEPF Date Extracted:06/11/08

Concentrated Extract Volume: 500.0(uL) Date Analyzed: 06/13/08 02:34

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	0.30	0.96		U
208-96-8	Acenaphthylene	0.22	0.96		U
120-12-7	Anthracene	0.37	0.96		U
56-55-3	Benzo(a)anthracene	0.44	0.96		U
205-99-2	Benzo(b)fluoranthene	0.34	0.96		U
207-08-9	Benzo(k)fluoranthene	0.24	0.96		U
191-24-2	Benzo(g,h,i)perylene	0.70	0.96		U
50-32-8	Benzo(a)pyrene	0.29	0.96		U
218-01-9	Chrysene	0.48	0.96		U
53-70-3	Dibenz(a,h)anthracene	0.82	0.96		U
206-44-0	Fluoranthene	0.34	0.96		U
86-73-7	Fluorene	0.26	0.96		U
193-39-5	Indeno(1,2,3-cd)pyrene	0.68	0.96		U
91-20-3	Naphthalene	0.22	0.96		U
85-01-8	Phenanthrene	0.37	0.96		U
129-00-0	Pyrene	0.31	0.96		U

APPENDIX F

Laboratory Analytical Data

EMPIRICAL LABORATORIES, LLC CHAIN OF CUSTODY RECORD

SHIP TO: 227 French Landing Drive, Suite 550 ♦ Nashville, TN 37228 ♦ 615-345-1115 ♦ (fax) 615-846-5426

Send Results to:	Send Invoice to: SAME
Name DOUG HALON	Name
Company SES LLC	Company
Address 1006 Floyd Cullerct	Address
City OAK RIDGE	City
State, Zip TN 37830	State, Zip
Phone 865-481-7837	Phone
Fax 865-481-0290	Fax
E-mail DHALON@SPECPROENV.COM	E-mail
Project No./Name: SWMU 13	Sampler's (Signature): Jeff Williams

Analysis Requirements: BTEX, GRO; PAH, DRO

Lab Use Only: KO

VOA Headspace	Y	(N)	(NA)
Field Filtered	Y	(N)	NA
Correct Containers	(Y)	N	NA
Discrepancies	Y	(N)	NA
Cust. Seals Intact	(Y)	N	NA
Containers Intact	(Y)	N	NA

Airbill #:

CAR #:

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	BTEX	GRO	PAH	DRO	Comments	No. of Bottles	Lab Use Only Containers/Pres.
0804080-01		TRIP BLANK 5452	WATER	X				LAB PREPPED	2	25
" -02	4-8-08/1520	13 SS01	Soil	X		X			4	3EN, 1m

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)	
Relinquished by: (Signature) Jeff Williams	Date/Time 4-8-08/1700	Received By: (Signature)	
Relinquished by: (Signature)	Date/Time	Received By: (Signature)	
Received for Laboratory by: (Signature)	Date/Time 4-9-08 1000	Temperature 3.1°C	

REMARKS: CALL DOUG HALON UPON RECEIPT

Details:
Page 1 of 1
Cooler No. 1 of 1
Date Shipped 4-8-08
Shipped By UPS
Turnaround RUSH

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers.

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 SS01

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: Case No.: SAS No.: NA SDG No.: SES.V04080

Matrix: (soil/water) SOIL Lab Sample ID: 0804080-02

Sample wt/vol: 6.0 (g/mL) G Lab File ID: 0408002A

Level: (low/med) LOW Date Sampled: 04/08/08 15:20

% Moisture: not dec. 12 Date Analyzed: 04/09/08 12:25

GC Column: RTX-VRX ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
71-43-2	Benzene	0.45	4.8		U
100-41-4	Ethylbenzene	0.71	4.8		U
108-88-3	Toluene	0.82	4.8		U
1330-20-7	Xylene (total)	0.66	4.8		U

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 SS01

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: SES.B04080

Matrix: (soil/water) SOIL Lab Sample ID: 0804080-02

Sample wt/vol: 15.4 (g/mL) G Lab File ID: 0408002

% Moisture: 12 decanted: (Y/N) N Date Sampled: 04/08/08 15:20

Extraction: (SepF/Cont/Sonc/Soxh) SOXH Date Extracted: 04/09/08

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/09/08 15:00

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
83-32-9	Acenaphthene	15	56		U
208-96-8	Acenaphthylene	11	56		U
120-12-7	Anthracene	15	56		U
56-55-3	Benzo(a)anthracene	20	56		U
205-99-2	Benzo(b)fluoranthene	18	56		U
207-08-9	Benzo(k)fluoranthene	22	56		U
191-24-2	Benzo(g,h,i)perylene	39	56		U
50-32-8	Benzo(a)pyrene	13	56		U
218-01-9	Chrysene	17	56		U
53-70-3	Dibenz(a,h)anthracene	33	56		U
206-44-0	Fluoranthene	30	56		U
86-73-7	Fluorene	14	56		U
193-39-5	Indeno(1,2,3-cd)pyrene	26	56		U
91-20-3	Naphthalene	18	56		U
85-01-8	Phenanthrene	13	56		U
129-00-0	Pyrene	22	56		U

FORM 1
GRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 SS01

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: Case No.: SAS No.: NA SDG No.: SES.G04080

Matrix: (soil/water) SOIL Lab Sample ID: 0804080-02

Sample wt/vol: 6.0 (g/mL) G Lab File ID: 006F0101

Level: (low/med) HIGH Date Sampled: 04/08/08 15:20

% Moisture: not dec. 12 Date Analyzed: 04/10/08 10:11

GC Column: RTX 502.2 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: 5000(ul) Soil Aliquot Volume: 100(ul)

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
8006-61-9	Gasoline Range Organics	2.4	4.8		U

FORM 1
DRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

13 SS01

Lab Name: EMPIRICAL LABS Contract: SES

Lab Code: Case No.: SAS No.: NA SDG No.: SES.D04080

Matrix: (soil/water) SOIL Lab Sample ID: 0804080-02

Sample wt/vol: 25.4 (g/mL) G Lab File ID: 013R0201

% Moisture: 12 decanted: (Y/N) N Date Sampled: 04/08/08 15:20

Extraction: (SepF/Cont/Sonc/Soxh) SONC Date Extracted:04/08/08

Concentrated Extract Volume: 1.0(mL) Date Analyzed: 04/10/08 01:35

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: NA Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG

CAS NO.	COMPOUND	MDL	RL	CONC	Q
11-84-7	-------Diesel Range Organics	4.5	4.5		U

Empirical Laboratories