Range 12 Supplemental Soil Removal and Erosion Control Report

Fort McClellan
Calhoun County, Alabama

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Task Order CK11
Contract No. DACA21-96-D-0018
Shaw Project No. 800486

August 2009

Revision 0

Table of Contents

Page

List of Appendices

List of Tables

List of Figures

1.0 Introduction

This report documents the supplemental soil removal and erosion control activities conducted by Shaw Environmental, Inc. (Shaw) at Range 12, Parcel 70Q located within the former Fort McClellan (FTMC) in Calhoun County, Alabama (Figure 1). This scope of work continues the initial phase of work conducted by Shaw in early 2005 during the interim soil removal action within the Alabama Department of Transportation (ALDOT) Eastern Bypass Corridor (EBC), a tract of land reserved for construction of public highway and the supplemental erosion control measures performed in February 2006.

In 2005 and 2006, Shaw removed, stabilized, and disposed of lead-contaminated soil up to the ALDOT property line within Range 12 to facilitate property transfer. However, the ALDOT property line at Range 12 falls within the range's hillside impact zone. Consequently, the impact zone is divided into a lower hillside section within the EBC that was remediated and an upper hillside section outside the EBC that was not remediated. Although Shaw installed a silt fence along the ALDOT property, a small area of lead-contaminated soils from the upper section breached the barrier and sloughed down into the lower hillside section within the EBC (Figure 2). Shaw conducted the removal and erosion control activities in accordance with the provisions of Contract DACA21-96-D-0018, Task Order CK11, for the U.S. Army Environmental Center through the U.S. Army Corps of Engineers, Mobile District.

2.0 Scope and Objective

The scope of work for soil removal activities at Range 12 was detailed in a site-specific work plan issued on May 26, 2009 (Shaw, 2009). The purpose of this removal action was to excavate lead-contaminated soil that had sloughed off the hillside into the lower section of the EBC where lead concentrations exceed the industrial cleanup level of 880 milligrams per kilogram (mg/kg) (Shaw, 2009). Additional activities associated with the soil removal action included off-site laboratory analyses, post-excavation confirmation sampling, waste characterization sampling, repair of the silt fence, transportation and disposal of waste soil at a permitted off-site facility, and implementation of erosion control measures.

3.0 Removal Action Field Activities

This section describes the field activities performed during the supplemental soil removal and erosion control activities at Range 12.

These activities included the following:

- Unexploded ordnance (UXO) avoidance
- Supplemental soil removal and waste characterization sampling and analysis
- Post-excavation confirmation soil sampling and analysis
- Waste soil transportation and disposal
- Erosion control and site restoration.

3.1 UXO Avoidance

Shaw subcontracted UXO support to ISSI Unexploded Ordnance, Inc. Prior to beginning intrusive field activities, UXO technicians completed a surface sweep of the planned work areas prior to commencing intrusive field activities using Schonstedt hand-held magnetometers. No UXO items or metallic debris was found at the site except existing silt fencing materials (i.e., rebar). After the site was cleared for access, the work area was monitored by two UXO technicians following procedures in the FTMC *Installation-Wide Sampling and Analysis Plan* (SAP) (IT, 2002).

3.2 Soil Removal, Staging, and Waste Characterization

Based on visual indications, the actual sloughed soil into the EBC within the lower hillside at Range 12 encompassed an area of approximately 4 feet by 12 feet. The vast majority of this area and the surrounding hillside and adjacent areas are mostly rock with little or no soil cover. The sloughed soil area was mechanically excavated to 1-foot below grade using a backhoe bucket and placed into an on-site 20-cubic yard roll-off container for waste characterization.

In order to characterize the soil for waste disposal purposes, a composite sample was collected directly from the roll-off container (sample number XX0310) and sent to EMAX Laboratories, Inc. (EMAX) for Toxicity Characteristic Leaching Procedure (TCLP) metals analysis by EPA Methods 1311/6010B, as per the site-specific work plan. The results of the sample showed that the soil was below the TCLP regulatory criteria and could be disposed as non-hazardous special waste (Table 1). The laboratory analytical data for the waste characterization samples are provided in Appendix B.

3.3 Post-Excavation Confirmation Sampling

Once the sloughed soil was removed from the lower hillside, two confirmation soil samples (sample numbers HE0026 and HE0027) were collected from the 1-foot-deep excavated area to confirm that lead-contaminated soils were removed to levels below the cleanup goal of 880 milligrams per kilogram (mg/kg). The post-excavation sample locations are shown on Figure 2.

Both confirmation soil sample results (15.9 mg/kg and 10.3 mg/kg) were well below the cleanup goal as summarized in Table 2.

The sample collection logs and analysis request/chain-of-custody forms for the confirmation samples are provided in Appendix A. The laboratory analytical data are included in Appendix B.

Each confirmation soil sample was comprised of a five-point composite sample collected from the excavation floor. The center point of the composite sample was marked with a sequentially-numbered pin flag to identify the location in the field. Samples were homogenized in a resealable plastic bag, placed into sample containers, and shipped to EMAX for total lead analysis using EPA Method 6010B. Data were reported on a 24-hour turnaround time to facilitate decision-making and expedite the fieldwork.

3.4 Sample Documentation, Custody, Packaging, and Shipping

Sample documentation, custody, packaging, and shipping followed the procedures described in the FTMC SAP (IT, 2002). Sample custody was maintained at all times by the Shaw site manager prior to shipment to EMAX. Sample containers, sample volumes, and holding times for the analyses performed in this investigation are listed in the SAP. Sample documentation and chain-of-custody records were completed as specified in the SAP. Completed analysis request and chain-of-custody records (Appendix A) were included with the shipment of sample coolers to EMAX in Torrance, California.

3.5 Soil Transportation and Disposal

Shaw subcontracted Onyx Environmental Services (Onyx) to provide transportation and disposal services for the excavated soil. The waste characterization data (Table 1) indicated that the soil could be disposed as non-hazardous special waste. The excavated soil (1.05 tons) was disposed at the Onyx Cedar Hill Landfill in Ragland, Alabama. Onyx allowed disposal of the soil under an existing Alabama Department of Environmental Management (ADEM)-approved waste profile form (waste profile # 050044) for soil with potential metals contamination after recertification of the existing waste profile was completed prior to soil disposal. The solid waste profile sheet for recertification and ADEM approval letter for waste certification are included in Appendix C.

Copies of the transportation waste manifests and disposal facility weigh tickets are also provided in Appendix C. Photographs of the soil removal action field activities are provided in Appendix D.

3.6 Erosion Control and Site Restoration

Site restoration and erosion control began after the confirmatory sampling results from EMAX indicated the lead concentrations were less than 880 mg/kg. In addition to removing the small area of sloughed soil from the lower hillside, Shaw made repairs to the silt fence and wooden planking previously installed and provided treatment to the exposed hillside above the silt fence. Shaw subcontracted Putnam Erosion Controls, Inc. of Ashville, Alabama to treat the exposed soil above the silt fence to encourage vegetative growth and thereby reduce the likelihood of further sloughing of material downslope. The treatment consisted of the application of grass seed mixed with a polymer and bonded fiber matrix (BFM) using a hydro-spraying technique. BFM is a hydraulically applied flexible erosion control blanket composed of long strand, thermally processed wood fibers and a proprietary crosslinked, hydrocolloid tackifier (see Appendix E for supplemental information on BFM material). After curing for approximately 24 to 48 hours, the BFM forms and intimate bond with the soil surface to create a continuous, flexible, and biodegradable erosion blanket that allows for rapid seed germination and accelerated plant growth. A photograph of the BFM-treated area is provided in Appendix D.

The 4-foot by 12-foot excavation area was filled primarily using surrounding rock (since very little site soils were present) and compacted using the backhoe bucket once the lead results confirmed that the cleanup goals were achieved. No offsite fill material was used.

4.0 Summary

Shaw performed supplemental soil removal and erosion control activities at Range 12 from May 26 through June 15, 2009. Soil removal field activities consisted of site preparation, excavation of lead-contaminated soil, post-excavation confirmation sampling and analysis, waste characterization sampling and analysis, transportation and disposal of waste soil, silt fence repairs, vegetative growth treatment using a BFM application, and site restoration. A total of 1.05 tons of soil was excavated at Range 12, transported by a licensed waste hauler, and disposed as nonhazardous, special waste at the Onyx Cedar Hill Landfill in Ragland, Alabama. Based on the results of the post-excavation confirmation soil sampling, the excavated soil was well below the 880 mg/kg cleanup goal previously established for the ALDOT EBC property.

5.0 References

IT Corporation (IT), 2002, ***Draft Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, Revision 3, February.

Shaw Environmental, Inc. (Shaw), 2009, ***Final Letter Work Plan-Range 12 Supplemental Soil Removal Action and Erosion Control,*** May 26.

ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

2-ADNT	2-amino-4,6-dinitrotoluene
4-ADNT	4-amino-2,6-dinitrotoluene
2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
2,4,5-TP	2,4,5-trichlorophenoxypropionic acid
3D	3D International Environmental Group
AB	ambient blank
AbB3	Anniston gravelly clay loam, 2 to 6 percent slopes, severely eroded
AbC3	Anniston gravelly clay loam, 6 to 10 percent slopes, severely eroded
AbD3	Anniston and Allen gravelly clay loams, 10 to 15 percent slopes, eroded
ABLM	adult blood lead model
Abs	skin absorption
ABS	dermal absorption factor
AC	hydrogen cyanide
ACAD	AutoCadd
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded
ACGIH	American Conference of Governmental Industrial Hygienists
ACM	asbestos-containing material
AdE	Anniston and Allen stony loam, 10 to 25 percent slope
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AEC	U.S. Army Environmental Center
AEDA	ammunition, explosives, and other dangerous articles
AEL	airborne exposure limit
AET	adverse effect threshold; apparent effects threshold
AF	soil-to-skin adherence factor
AHA	ammunition holding area
AL	Alabama
ALARNG	Alabama Army National Guard
ALAD	δ-aminolevulinic acid dehydratase
ALDOT	Alabama Department of Transportation
amb.	amber
amsl	above mean sea level
ANAD	Anniston Army Depot
ANOVA	Analysis of Variance
AOC	area of concern
AOI	area of investigation
AP	armor piercing
APEC	areas of potential ecological concern
APT	armor-piercing tracer
AR	analysis request
ARAR	applicable or relevant and appropriate requirement
AREE	area requiring environmental evaluation
AS/SVE	air sparging/soil vapor extraction
ASP	Ammunition Supply Point
ASR	Archives Search Report
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AT	averaging time
atm-m^3/mol	atmospheres per cubic meter per mole
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
AUF	area use factor
AWARE	Associated Water and Air Resources Engineers, Inc.
AWQC	ambient water quality criteria
AWWSB	Anniston Water Works and Sewer Board
‘B’	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)
BAF	bioaccumulation factor
BBGR	Baby Bains Gap Road
BCF	blank correction factor; bioconcentration factor
BCT	BRAC Cleanup Team
BERA	baseline ecological risk assessment
BEHP	bis(2-ethylhexyl)phthalate
BFB	bromofluorobenzene
BFE	base flood elevation
BFM	bonded fiber matrix
BG	Bacillus globigii
BGR	Bains Gap Road
bgs	below ground surface
BHC	hexachlorocyclohexane
BHHRA	baseline human health risk assessment
BIRTC	Branch Immaterial Replacement Training Center
bkg	background
bls	below land surface
BOD	biological oxygen demand
Bp	soil-to-plant biotransfer factors
BRAC	Base Realignment and Closure
Braun	Braun Intertec Corporation
BSAF	biota-to-sediment accumulation factors
BSC	background screening criterion
BSV	background screening values
BTAG	Biological Technical Assistance Group
BTEX	benzene, toluene, ethyl benzene, and xylenes
BTOC	below top of casing
BTV	background threshold value
BW	biological warfare; body weight
BZ	breathing zone; 3-quinuclidinyl benzilate
C	ceiling limit value
Ca	carcinogen
$CaCO_3$	calcium carbonate
CAA	Clean Air Act
CAB	chemical warfare agent breakdown products
CACM	Chemical Agent Contaminated Media
CAIS	chemical agent identification set
CAMU	corrective action management unit
CBR	chemical, biological, and radiological
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
CD	compact disc
CDTF	Chemical Defense Training Facility
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CF	chloroform
CF	conversion factor
CFC	chlorofluorocarbon
CFDP	Center for Domestic Preparedness
CFR	Code of Federal Regulations
CG	phosgene (carbonyl chloride)
CGI	combustible gas indicator
ch	inorganic clays of high plasticity
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
CIH	Certified Industrial Hygienist
CK	cyanogen chloride
cl	inorganic clays of low to medium plasticity
Cl	chlorinated
CLP	Contract Laboratory Program
cm	centimeter
CN	chloroacetophenone
CNB	chloroacetophenone, benzene, and carbon tetrachloride
CNS	chloroacetophenone, chloropicrin, and chloroform
CO	carbon monoxide
CO_2	carbon dioxide
Co-60	cobalt-60
CoA	Code of Alabama
COC	chain of custody; chemical of concern
COE	Corps of Engineers
Con	skin or eye contact
COPC	chemical of potential concern
COPEC	constituent of potential ecological concern
CPOM	coarse particulate organic matter
CPSS	chemicals present in site samples
CQCSM	Contract Quality Control System Manager
CRDL	contract-required detection limit
CRL	certified reporting limit
CRQL	contract-required quantitation limit
CRZ	contamination reduction zone
Cs-137	cesium-137

CS	ortho-chlorobenzylidene-malononitrile
CSEM	conceptual site exposure model
CSM	conceptual site model
CT	central tendency
CT	carbon tetrachloride
ctr.	container
CWA	chemical warfare agent; Clean Water Act
CWM	chemical warfare materiel; clear, wide mouth
CX	dichloroformoxime
'D'	duplicate; dilution
D&I	detection and identification
DA	Department of the Army
DAAMS	depot area agent monitoring station
DAF	dilution-attenuation factor
DANC	decontamination agent, non-corrosive
ºC	degrees Celsius
ºF	degrees Fahrenheit
DCA	dichloroethane
DCE	dichloroethene
DD	Defense Department
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DEH	Directorate of Engineering and Housing
DEHP	di(2-ethylhexyl)phthalate
DEP	depositional soil
DFTPP	decafluorotriphenylphosphine
DI	deionized
DID	data item description
DIMP	di-isopropylmethylphosphonate
DM	dry matter; adamsite
DMBA	dimethylbenz(a)anthracene
DMMP	dimethylmethylphosphonate
DNAPL	dense nonaqueous-phase liquid
DNT	dinitrotoluene
DO	dissolved oxygen
DOD	U.S. Department of Defense
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
DP	direct-push
DPDO	Defense Property Disposal Office
DPT	direct-push technology
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
DRO	diesel range organics
DS	deep (subsurface) soil
DS2	Decontamination Solution Number 2
DSERTS	Defense Site Environmental Restoration Tracking System
DWEL	drinking water equivalent level
E&E	Ecology and Environment, Inc.
EB	equipment blank
EBC	Eastern Bypass Corridor
EBS	environmental baseline survey
EBV	EBV Explosives Environmental Co.
EC_{20}	effects concentration for 20 percent of a test population
EC_{50}	effects concentration for 50 percent of a test population
ECBC	Edgewood Chemical Biological Center
ED	exposure duration
EDD	electronic data deliverable
EF	exposure frequency
EDQL	ecological data quality level
EE/CA	engineering evaluation and cost analysis
Eh	oxidation-reduction potential
Elev.	elevation
EM	electromagnetic
EMI	Environmental Management Inc.
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
EOD	explosive ordnance disposal
EODT	explosive ordnance disposal team
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EPIC	Environmental Photographic Interpretation Center
EPRI	Electrical Power Research Institute
EPT	Ephemeroptera, Plecoptera, Trichoptera
ER	equipment rinsate
ERA	ecological risk assessment
ER-L	effects range-low
ER-M	effects range-medium
ESE	Environmental Science and Engineering, Inc.
ESL	ecological screening level
ESMP	Endangered Species Management Plan
ESN	Environmental Services Network, Inc.
ESV	ecological screening value
ET	exposure time
EU	exposure unit
Exp.	Explosives
EXTOXNET	Extension Toxicology Network
E-W	east to west
EZ	exclusion zone
FAR	Federal Acquisition Regulations
FB	field blank
FBI	Family Biotic Index
FD	field duplicate
FDC	Former Decontamination Complex
FDA	U.S. Food and Drug Administration
Fe^{+3}	ferric iron
Fe^{+2}	ferrous iron
FedEx	Federal Express, Inc.
FEMA	Federal Emergency Management Agency
FFCA	Federal Facilities Compliance Act
FFE	field flame expedient
FFS	focused feasibility study
FI	fraction of exposure
Fil	filtered
Flt	filtered
FMDC	Fort McClellan Development Commission
FML	flexible membrane liner
f_{oc}	fraction organic carbon
FOMRA	Former Ordnance Motor Repair Area
FOST	Finding of Suitability to Transfer
Foster Wheeler	Foster Wheeler Environmental Corporation
FR	Federal Register
Frtn	fraction
FS	field split; feasibility study; fuming sulfuric acid
FSP	field sampling plan
ft	feet
ft/day	feet per day
ft/ft	feet per foot
ft/yr	feet per year
FTA	Fire Training Area
FTMC	Fort McClellan
FTRRA	FTMC Reuse & Redevelopment Authority
g	gram
g/m^3	gram per cubic meter
G-856	Geometrics, Inc. G-856 magnetometer
G-858G	Geometrics, Inc. G-858G magnetic gradiometer
GAF	gastrointestinal absorption factor
gal	gallon
gal/min	gallons per minute
GB	sarin (isopropyl methylphosphonofluoridate)
gc	clay gravels; gravel-sand-clay mixtures
GC	gas chromatograph
GCL	geosynthetic clay liner
GC/MS	gas chromatograph/mass spectrometer
GCR	geosynthetic clay liner
GFAA	graphite furnace atomic absorption
GIS	Geographic Information System
gm	silty gravels; gravel-sand-silt mixtures
gp	poorly graded gravels; gravel-sand mixtures
gpm	gallons per minute
GPR	ground-penetrating radar
GPS	global positioning system
GRA	general response action

GS	ground scar
GSA	General Services Administration; Geologic Survey of Alabama
GSBP	Ground Scar Boiler Plant
GSSI	Geophysical Survey Systems, Inc.
GST	ground stain
GW	groundwater
gw	well-graded gravels; gravel-sand mixtures
H&S	health and safety
HA	hand auger
HC	mixture of hexachloroethane, aluminum powder, and zinc oxide (smoke producer)
HCl	hydrochloric acid
HD	distilled mustard (bis-[dichloroethyl]sulfide)
HDPE	high-density polyethylene
HE	high explosive
HEAST	Health Effects Assessment Summary Tables
Herb.	herbicides
HHRA	human health risk assessment
HI	hazard index
HN	hydrogen mustard
H_2O_2	hydrogen peroxide
HPLC	high-performance liquid chromatography
HNO_3	nitric acid
HQ	hazard quotient
HQ_{screen}	screening-level hazard quotient
hr	hour
HRC	hydrogen releasing compound
HSA	hollow-stem auger
HSDB	Hazardous Substance Data Bank
HTRW	hazardous, toxic, and radioactive waste
‘I’	out of control, data rejected due to low recovery
IASPOW	Impact Area South of POW Training Facility
IATA	International Air Transport Authority
ICAL	initial calibration
ICB	initial calibration blank
ICP	inductively-coupled plasma
ICRP	International Commission on Radiological Protection
ICS	interference check sample
ID	inside diameter
IDL	instrument detection limit
IDLH	immediately dangerous to life or health
IDM	investigative-derived media
IDW	investigation-derived waste
IEUBK	Integrated Exposure Uptake Biokinetic
IF	ingestion factor; inhalation factor
ILCR	incremental lifetime cancer risk
IMPA	isopropylmethyl phosphonic acid
IMR	Iron Mountain Road
in.	inch
Ing	ingestion
Inh	inhalation
IP	ionization potential
IPS	International Pipe Standard
IR	ingestion rate
IRDMIS	Installation Restoration Data Management Information System
IRIS	Integrated Risk Information Service
IRP	Installation Restoration Program
IS	internal standard
ISCP	Installation Spill Contingency Plan
IT	IT Corporation
ITEMS	IT Environmental Management System™
ITRC	Interstate Trade and Regulatory Council
IWWP	installation-wide work plan
‘J’	estimated concentration
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes
JPA	Anniston-Calhoun County Fort McClellan Development Joint Powers Authority
K	conductivity
K_d	soil-water distribution coefficient
kg	kilogram
KeV	kilo electron volt
K_{oc}	organic carbon partioning coefficient
K_{ow}	octonal-water partition coefficient
$KMnO_4$	potassium permanganate
L	liter; Lewisite (dichloro-[2-chloroethyl]sulfide)
L/kg/day	liters per kilogram per day
l	liter
LAW	light anti-tank weapon
lb	pound
LBP	lead-based paint
LC	liquid chromatography
LCS	laboratory control sample
LC_{50}	lethal concentration for 50 percent population tested
LD_{50}	lethal dose for 50 percent population tested
LEL	lower explosive limit
LOAEL	lowest-observed-adverse-effects-level
LOEC	lowest-observable-effect-concentration
LRA	land redevelopment authority
LT	less than the certified reporting limit
LUC	land-use control
LUCAP	land-use control assurance plan
LUCER	land-use control effectiveness report
LUCIP	land-use control implementation plan
m	meter
m/yr	meters per year
max	maximum
MB	method blank
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MCPA	4-chloro-2-methylphenoxyacetic acid
MCPP	2-(2-methyl-4-chlorophenoxy)propionic acid
MCS	media cleanup standard
MD	matrix duplicate
MDA	Calhoun County McClellan Development Authority
MDC	maximum detected concentration
MDCC	maximum detected constituent concentration
MDL	method detection limit
MEC	munitions and explosives of concern
MeV	mega electron volt
mg	milligrams
mg/kg	milligrams per kilogram
mg/kg/day	milligram per kilogram per day
mg/kgbw/day	milligrams per kilogram of body weight per day
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils
MHz	megahertz
µg/g	micrograms per gram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
min	minimum
MINICAMS	miniature continuous air monitoring system
ml	inorganic silts and very fine sands
mL	milliliter
mm	millimeter
MM	mounded material
MMBtu/hr	million Btu per hour
MNA	monitored natural attenuation
MnO_4-	permanganate ion
MOA	Memorandum of Agreement
MOGAS	motor vehicle gasoline
MOUT	Military Operations in Urban Terrain
MP	Military Police
MPA	methyl phosphonic acid
MPC	maximum permissible concentration
MPM	most probable munition
MQL	method quantitation limit
MR	molasses residue
MRL	method reporting limit
MS	matrix spike
mS/cm	millisiemens per centimeter
mS/m	millisiemens per meter

List of Abbreviations and Acronyms *(Continued)*

MSD	matrix spike duplicate; minimum separation distance
MTBE	methyl tertiary butyl ether
msl	mean sea level
MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes , severely eroded
mV	millivolts
MW	monitoring well
MWI&MP	Monitoring Well Installation and Management Plan
Na	sodium
NA	not applicable; not available
NAD	North American Datum
NAD83	North American Datum of 1983
$NaMnO_4$	sodium permanganate
NAVD88	North American Vertical Datum of 1988
NAS	National Academy of Sciences
NCEA	National Center for Environmental Assessment
NCP	National Contingency Plan
NCRP	National Council on Radiation Protection and Measurements
ND	not detected
NE	no evidence; northeast
ne	not evaluated
NEW	net explosive weight
NFA	No Further Action
NG	National Guard
NGP	National Guardsperson
ng/L	nanograms per liter
NGVD	National Geodetic Vertical Datum
Ni	nickel
NIC	notice of intended change
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLM	National Library of Medicine
NO_3^-	nitrate
NOEC	no-observable-effect-concentration
NPDES	National Pollutant Discharge Elimination System
NPW	net present worth
No.	number
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no-observed-adverse-effects-level
NR	not requested; not recorded; no risk
NRC	National Research Council
NRCC	National Research Council of Canada
NRHP	National Register of Historic Places
NRT	near real time
ns	nanosecond
N-S	north to south
NS	not surveyed
NSA	New South Associates, Inc.
nT	nanotesla
nT/m	nanoteslas per meter
NTU	nephelometric turbidity unit
nv	not validated
O_2	oxygen
O_3	ozone
O&G	oil and grease
O&M	operation and maintenance
OB/OD	open burning/open detonation
OD	outside diameter
OE	ordnance and explosives
oh	organic clays of medium to high plasticity
OH•	hydroxyl radical
ol	organic silts and organic silty clays of low plasticity
OP	organophosphorus
ORC	Oxygen Releasing Compound
ORP	oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OVM-PID/FID	organic vapor meter-photoionization detector/flame ionization detector
OWS	oil/water separator
oz	ounce
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
Parsons	Parsons Engineering Science, Inc.
Pb	lead
PBMS	performance-based measurement system
PC	permeability coefficient
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
PCE	perchloroethene
PCP	pentachlorophenol
PDS	Personnel Decontamination Station
PEF	particulate emission factor
PEL	permissible exposure limit
PERA	preliminary ecological risk assessment
PERC	perchloroethene
PES	potential explosive site
Pest.	pesticides
PETN	pentaerythritoltetranitrate
PFT	portable flamethrower
PG	professional geologist
PID	photoionization detector
PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes
PM	project manager
POC	point of contact
POL	petroleum, oils, and lubricants
POTW	publicly owned treatment works
POW	prisoner of war
PP	peristaltic pump; Proposed Plan
ppb	parts per billion
ppbv	parts per billion by volume
PPE	personal protective equipment
ppm	parts per million
PPMP	Print Plant Motor Pool
ppt	parts per thousand
PR	potential risk
PRA	preliminary risk assessment
PRG	preliminary remediation goal
PS	chloropicrin
PSSC	potential site-specific chemical
pt	peat or other highly organic silts
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
QAM	quality assurance manual
QAO	quality assurance officer
QAP	installation-wide quality assurance plan
QC	quality control
QST	QST Environmental, Inc.
qty	quantity
Qual	qualifier
QuickSilver	QuickSilver Analytics, Inc.
R	rejected data; resample; retardation factor
R^2	coefficient of determination
R&A	relevant and appropriate
RA	remedial action
RAO	remedial action objective
RBC	risk-based concentration; red blood cell
RBP	Rapid Bioassessment Protocol
RBRG	risk-based remedial goal
RCRA	Resource Conservation and Recovery Act
RCWM	Recovered Chemical Warfare Material
RD	remedial design
RDX	cyclotrimethylenetrinitramine
ReB3	Rarden silty clay loams
REG	regular field sample
REL	recommended exposure limit
RFA	request for analysis
RfC	reference concentration
RfD	reference dose
RGO	remedial goal option
RI	remedial investigation
RL	reporting limit

RME	reasonable maximum exposure
ROD	Record of Decision
RPD	relative percent difference
RR	range residue
RRF	relative response factor
RRSE	Relative Risk Site Evaluation
RSD	relative standard deviation
RTC	Recruiting Training Center
RTECS	Registry of Toxic Effects of Chemical Substances
RTK	real-time kinematic
RWIMR	Ranges West of Iron Mountain Road
SA	exposed skin surface area
SAD	South Atlantic Division
SAE	Society of Automotive Engineers
SAIC	Science Applications International Corporation
SAP	installation-wide sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act
sc	clayey sands; sand-clay mixtures
Sch.	schedule
SCM	site conceptual model
SD	sediment
SDG	sample delivery group
SDWA	Safe Drinking Water Act
SDZ	safe distance zone; surface danger zone
SEMS	Southern Environmental Management & Specialties, Inc.
SF	cancer slope factor
SFSP	site-specific field sampling plan
SGF	standard grade fuels
Shaw	Shaw Environmental, Inc.
SHP	installation-wide safety and health plan
SI	site investigation
SINA	Special Interest Natural Area
SL	standing liquid
SLERA	screening-level ecological risk assessment
sm	silty sands; sand-silt mixtures
SM	Serratia marcescens
SMDP	Scientific Management Decision Point
s/n	signal-to-noise ratio
SO_4^{-2}	sulfate
SOD	soil oxidant demand
SOP	standard operating procedure
SOPQAM	U.S. EPA's *Standard Operating Procedure/Quality Assurance Manual*
sp	poorly graded sands; gravelly sands
SP	submersible pump
SPCC	system performance calibration compound
SPCS	State Plane Coordinate System
SPM	sample planning module
SQRT	screening quick reference tables
Sr-90	strontium-90
SRA	streamlined human health risk assessment
SRI	supplemental remedial investigation
SRM	standard reference material
Ss	stony rough land, sandstone series
SS	surface soil
SSC	site-specific chemical
SSHO	site safety and health officer
SSHP	site-specific safety and health plan
SSL	soil screening level
SSSL	site-specific screening level
SSSSL	site-specific soil screening level
STB	supertropical bleach
STC	source-term concentration
STD	standard deviation
STEL	short-term exposure limit
STL	Severn-Trent Laboratories
STOLS	Surface Towed Ordnance Locator System®
Std. units	standard units
SU	standard unit
SUXOS	senior UXO supervisor
SVOC	semivolatile organic compound
SW	surface water
SW-846	U.S. EPA's *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*
SWMU	solid waste management unit
SWPP	storm water pollution prevention plan
SZ	support zone
TAL	target analyte list
TAT	turn around time
TB	trip blank
TBC	to be considered
TCA	trichloroethane
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCDF	tetrachlorodibenzofurans
TCE	trichloroethene
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TDEC	Tennessee Department of Environment and Conservation
TDGCL	thiodiglycol
TDGCLA	thiodiglycol chloroacetic acid
TEA	triethylaluminum
TeCA	1,1,2,2-tetrachloroethane
Tetryl	trinitrophenylmethylnitramine
TERC	Total Environmental Restoration Contract
TEU	Technical Escort Unit
THI	target hazard index
TIC	tentatively identified compound
TLV	threshold limit value
TN	Tennessee
TNB	trinitrobenzene
TNT	trinitrotoluene
TOC	top of casing; total organic carbon
TPH	total petroleum hydrocarbons
TR	target cancer risk
TRADOC	U.S. Army Training and Doctrine Command
TRPH	total recoverable petroleum hydrocarbons
TRV	toxicity reference value
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
TSS	total suspended solids
TWA	time-weighted average
UCL	upper confidence limit
UCR	upper certified range
'U'	not detected above reporting limit
UIC	underground injection control
UF	uncertainty factor
URF	unit risk factor
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USAEC	U.S. Army Environmental Center
USAEHA	U.S. Army Environmental Hygiene Agency
USACMLS	U.S. Army Chemical School
USAMPS	U.S. Army Military Police School
USATCES	U.S. Army Technical Center for Explosive Safety
USATEU	U.S. Army Technical Escort Unit
USATHAMA	U.S. Army Toxic and Hazardous Material Agency
USC	United States Code
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTL	upper tolerance level; upper tolerance limit
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Supervisor
UXOSO	UXO safety officer
V	vanadium
VC	vinyl chloride
VOA	volatile organic analyte
VOC	volatile organic compound
VOH	volatile organic hydrocarbon
VQlfr	validation qualifier
VQual	validation qualifier
VX	nerve agent (O-ethyl-S-[diisopropylaminoethyl]-methylphosphonothiolate)
WAC	Women's Army Corps

Weston	Roy F. Weston, Inc.
WP	white phosphorus
WRS	Wilcoxon rank sum
WS	watershed
WSA	Watershed Screening Assessment
WWI	World War I
WWII	World War II
XRF	x-ray fluorescence
yd^3	cubic yards
ZVI	zero-valent iron

TABLES

Table 1

Soil Stockpile Waste Characterization Sample Results
Supplemental Soil Removal and Erosion Control at Range 12
Fort McClellan, Alabama

Sample			Laboratory	TCLP	Regulatory	Result	
Location	Number	Date	File No.	Metal	Level (mg/L)	(mg/L)	Qual
Range12 - IDW	XX0310	5/27/2009	ID8F002123	Arsenic	5.0	ND	
				Barium	100.0	0.502	
				Cadmium	1.0	ND	
				Chromium	5.0	ND	
				Lead	5.0	0.506	
				Mercury	0.2	ND	
				Selenium	1.0	ND	
				Silver	5.0	ND	

mg/L - Milligrams per liter.
ND - Not detected above the method detection limit listed in parentheses.
Qual - Data qualifier.
TCLP - Toxicity Characteristic Leaching Procedure.

Table 2

Post-Excavation Confirmation Soil Sample Results
Supplemental Soil Removal and Erosion Control at Range 12
Fort McClellan, Alabama

Sample			Laboratory	Lead Result
Location	Number	Date	File No.	(mg/kg)
SAR-70-COMP1	HE0026	5/27/2006	ID8E027013	15.9
SAR-70-COMP2	HE0027	5/27/2006	ID8E027014	10.3

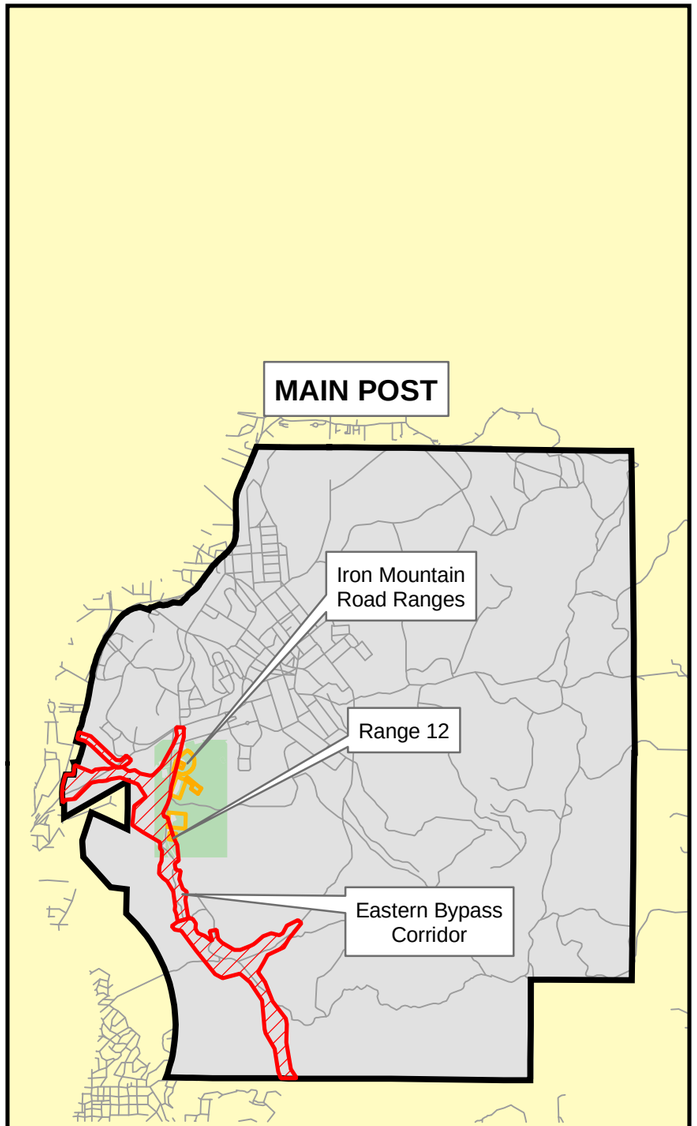
mg/kg - milligrams per kilogram.

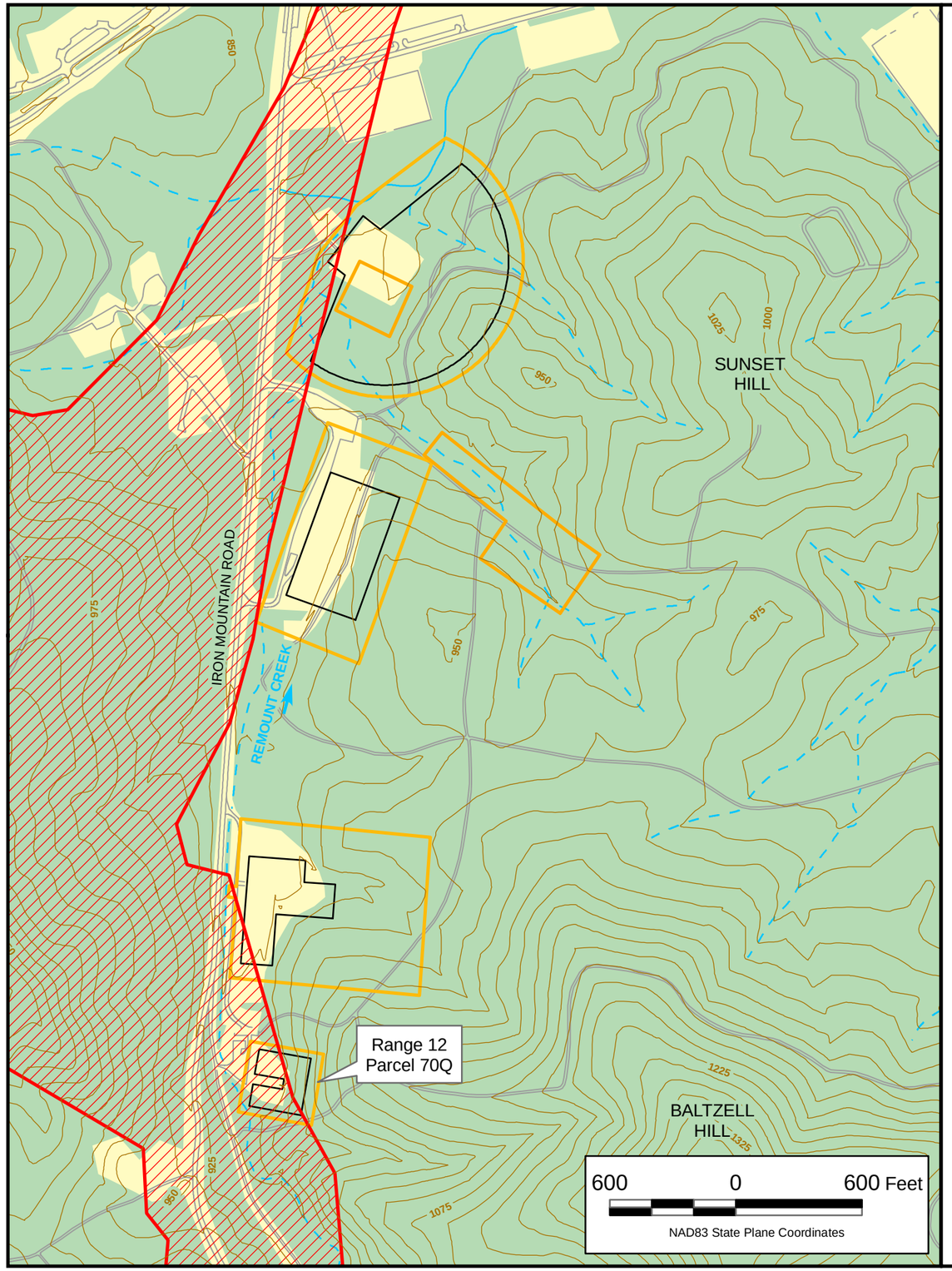
FIGURES

Figure 1

Site Location Map

Iron Mountain Road Ranges
Fort McClellan, Alabama





Legend

- Fort McClellan Main Post
- Eastern Bypass Corridor
- Study Area
- Wooded
- Cleared
- Roads
- Surface Drainage Feature (Dashed where intermittent)
- Topographic Contour (25-foot interval)
- Parcel Boundary

N

Shaw Environmental, Inc.

U.S. Army Corps of Engineers Mobile District

Contract No. DACA21-96-D-0018

e:/ftmc/mxd/eastern bypass/fig1_siteloc.mxd 07/09/09 ss

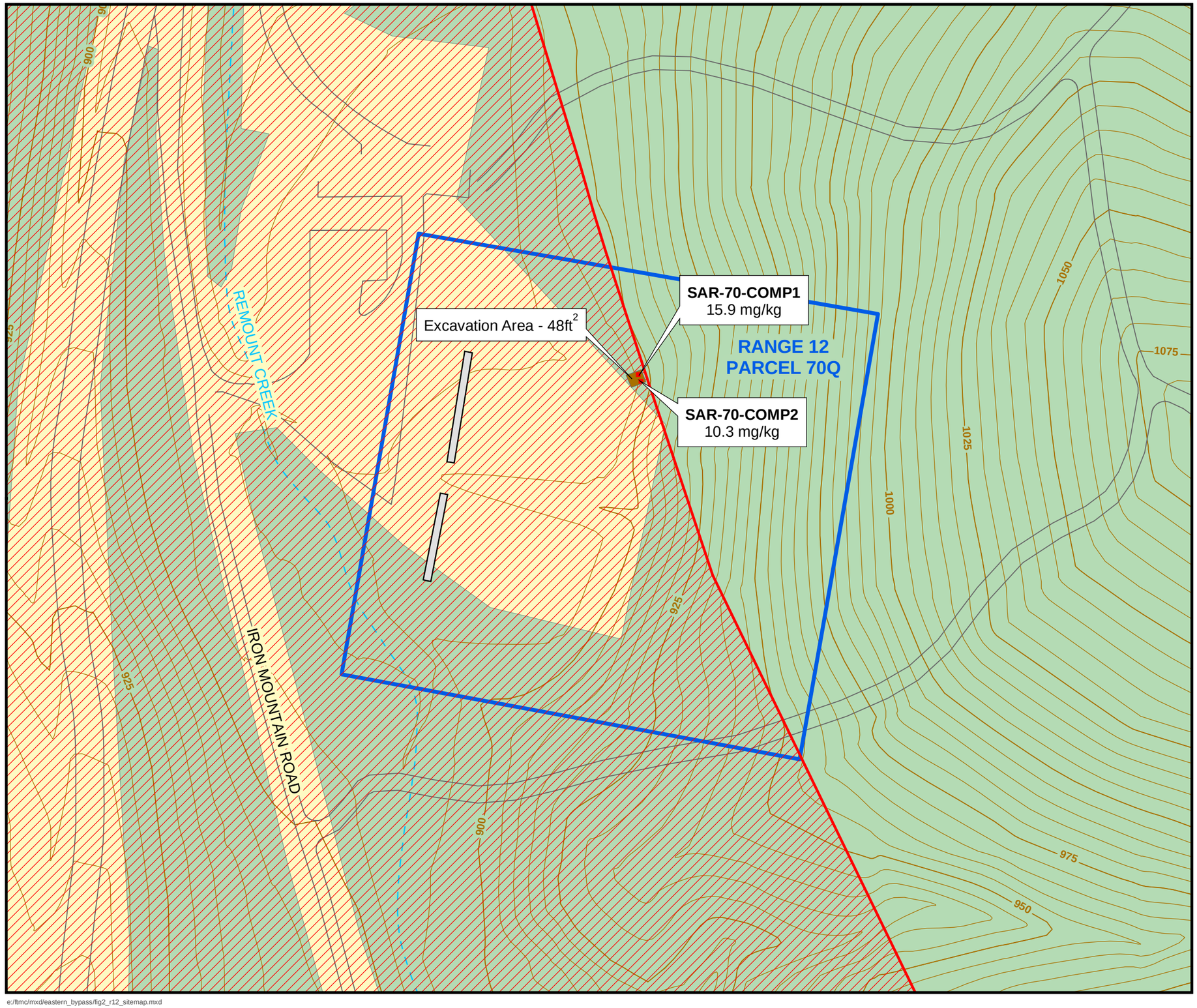


Figure 2

Site Map
Range 12, Parcel 70Q

Iron Mountain Road Ranges
Fort McClellan, Alabama

Legend

- Study Area
- Wooded
- Not Wooded
- Roads
- Intermittent Surface Drainage Feature
- Topographic Contour (5-foot interval)

EBC - Eastern Bypass Corridor

- Eastern Bypass Corridor
- Approximate 1-Foot Excavation Area
- Post-Excavation Soil Sample Location (1-foot depth)

SAR-70-COMP1 Sample ID

15.9 mg/kg Lead Concentration

75 0 75 Feet

NAD83 State Plane Coordinates

N

Shaw™ Shaw Environmental, Inc.

U.S. Army Corps of Engineers
Mobile District

Contract No. DACA21-96-D-0018

e:/ftmc/mxd/eastern_bypass/fig2_r12_sitemap.mxd

APPENDIX A

SAMPLE COLLECTION LOGS, AND ANALYSIS REQUEST/CHAIN-OF-CUSTODY RECORDS

SAMPLE COLLECTION LOGS

Shaw™
Shaw E & I, Inc.

Sample Collection Log

800486 Fort McClellan

Manager: Steve Moran

RFA / COC Number: No COC

Location Code: **IDW**
Sample Number: **XX0310**
Sample Name: **IDW-IDWS-XX0310-REG**
Sampling Method: **GRAB**
Sample Type: **IDWS** *Sample Purpose:* **REG**

Task: **CK11:ECO**
Collection Date: **27-MAY-09**
Collection Time: ~~08:00~~ 12:30
Start Depth: **0**
End Depth: **0**
Sample Matrix: **SOIL**
Sample Team: **JT**

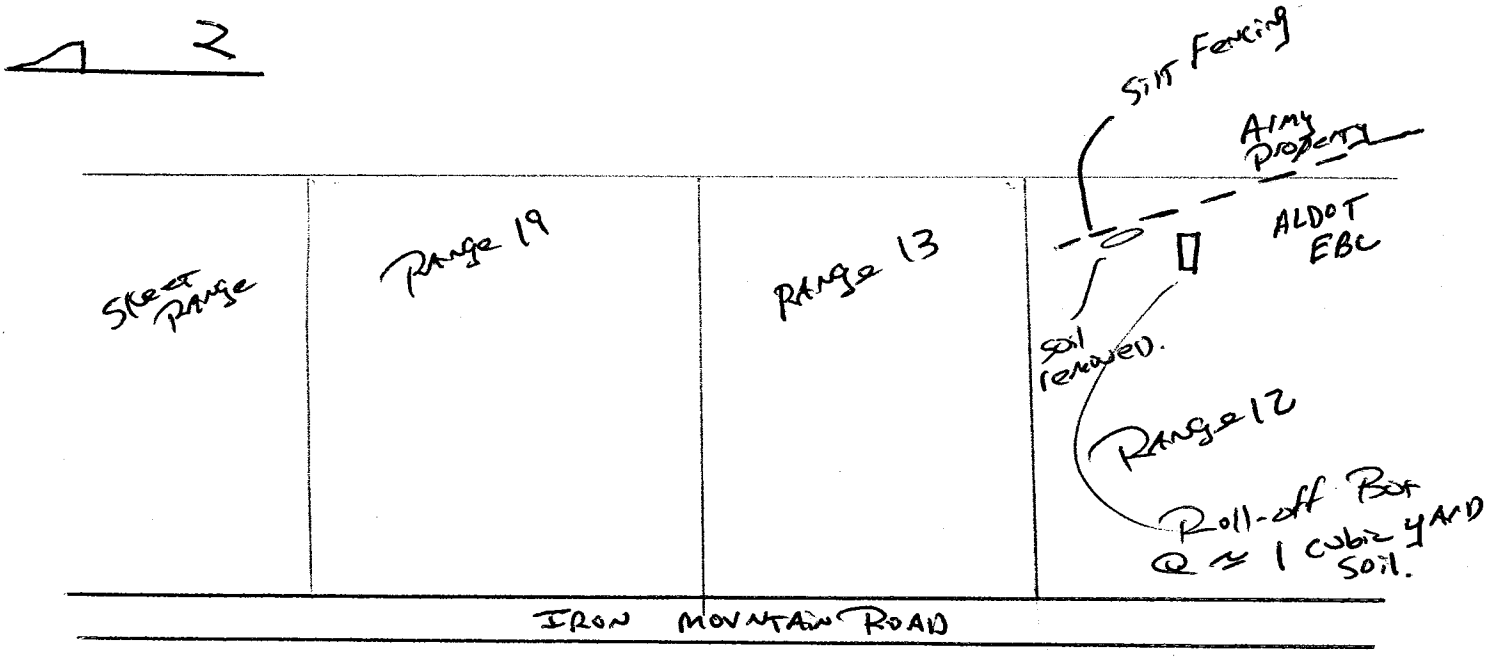
ERPIMS Values:
Sacode:
Lot Control#:

Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
TCLP-METALS	N	a	1	~~8~~ 4	oz	CW-JAR

Comments: IDW soil sample collected from Roll-off Box

Sketch Location:



Logged BY / Date: _____ 5-27-09 *Reviewed BY / Date:* _____

Shaw™
Shaw E & I, Inc.

Sample Collection Log

800486 - Fort McClellan

Manager: Steve Moran

RFA / COC Number: _____

Location Code: **SAR-70-COMP01**
Sample Number: **HE0026**
Sample Name: **SAR-70-COMP01-SS-HE0026-REG**
Sampling Method: **HA**
Sample Type: **SS** *Sample Purpose:* **REG**
Sampling Equip: HAND AUGER

Task: **CK11:EECA**
Collection Date: 5-27-09
Collection Time: 11:30
Start Depth: 0.5'
End Depth: 0.5'
Sample Matrix: **SOIL**

QC Partners:
(TB) _____ (ER) _____ (FB) _____

Sample Team: J. TARR

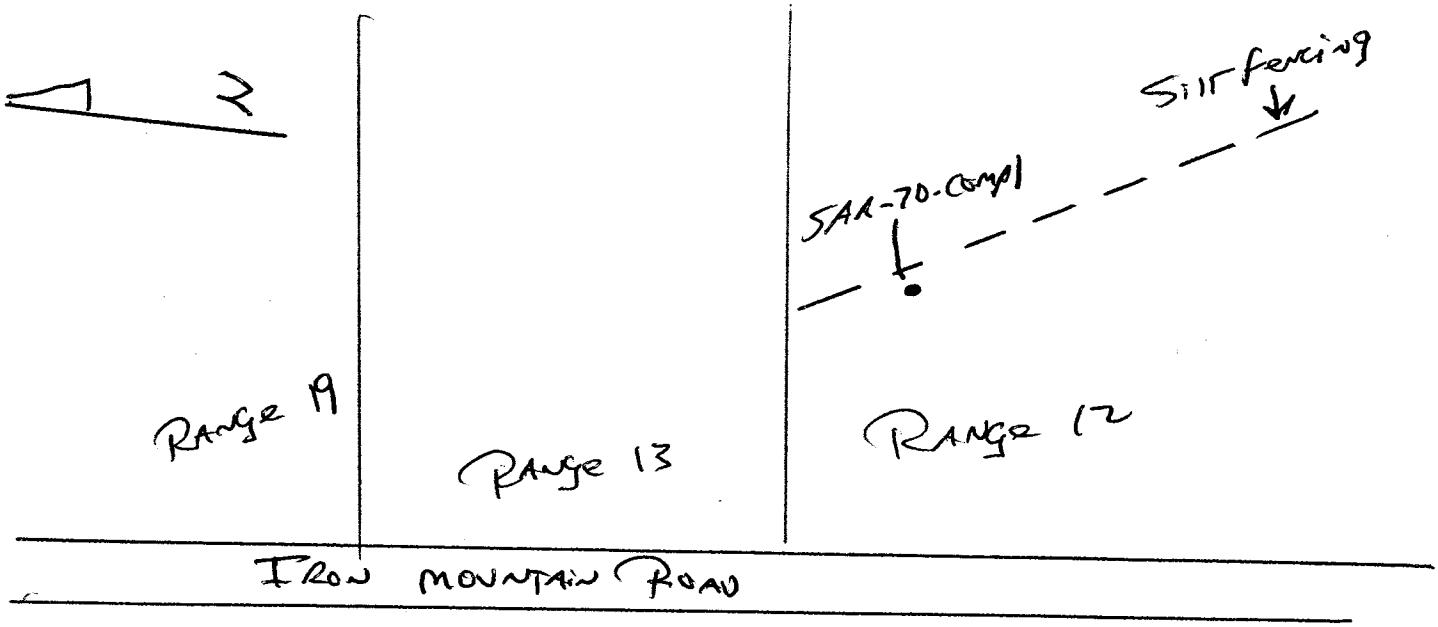
Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
LEAD	N	A	1	~~8~~ 4	oz	CW-JAR

ERPIMS Values:
Sacode: _____
Lot Control#: _____

Comments: Removed ≈ 1 cubic yard soil, placed into Roll-off Box. Collect composite soil sample at 0.5' bgs for TOCAL Pb.

Sketch Location:



Logged BY / Date: Jeff Tarr / 5-27-09 *Reviewed BY / Date:* _____

Shaw™
Shaw E & I, Inc.

Sample Collection Log

800486 - Fort McClellan

Manager: Steve Moran

RFA / COC Number: _____

Location Code: **SAR-70-COMP02**
Sample Number: **HE0027**
Sample Name: **SAR-70-COMP02-SS-HE0027-REG**
Sampling Method: **HA**
Sample Type: **SS** *Sample Purpose:* **REG**
Sampling Equip: HAND AUGER

Task: **CK11:EECA**
Collection Date: 5-27-09
Collection Time: 12:00
Start Depth: 1.0'
End Depth: 1.0'
Sample Matrix: **SOIL**
Sample Team: J. TAN.

QC Partners:
(TB) _____ (ER) _____ (FB) _____

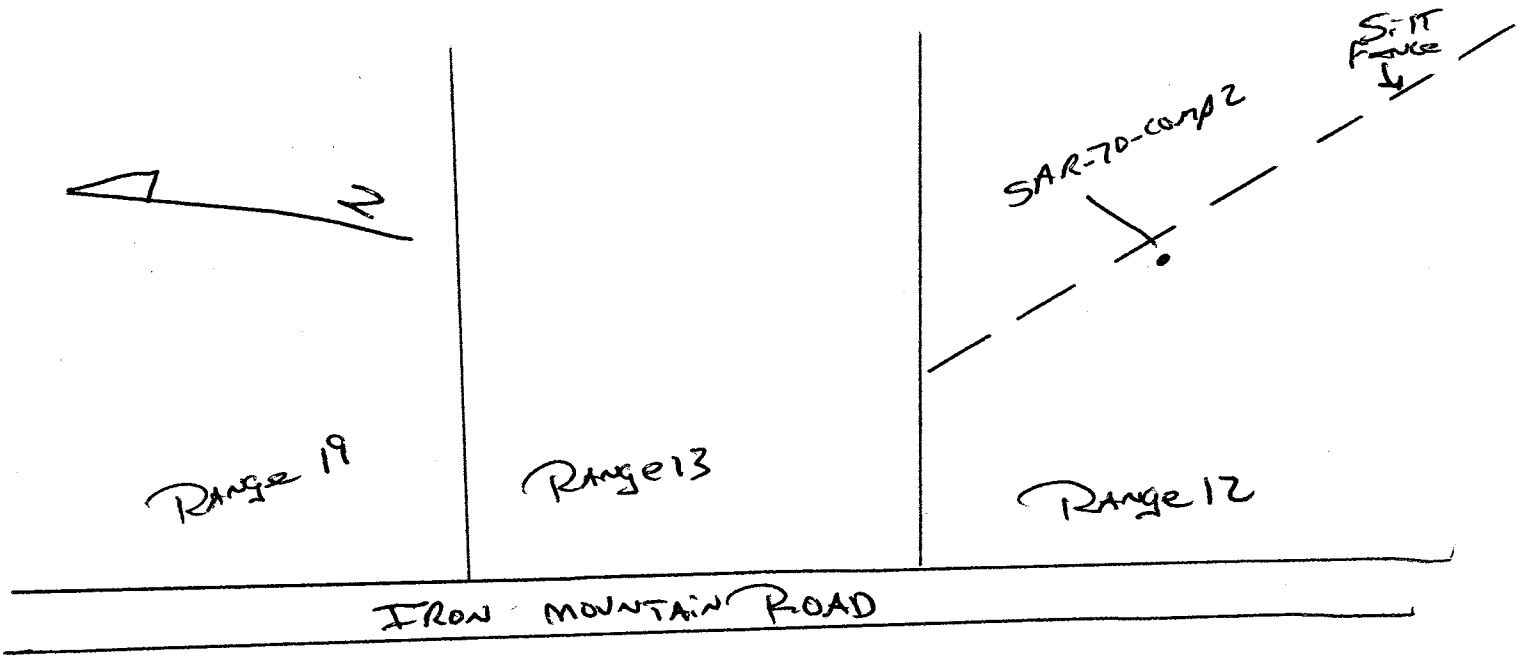
Containers

Analytical Suite	Flt	Frtn	Qty	Size	Units	Type
LEAD	N	A	1	~~8~~ 4	oz	CW-JAR

ERPIMS Values:
Sacode: _____
Lot Control#: _____

Comments: Removed ≈ 1 cubic YARD SOIL, placed into Roll-off Box. Collected composite SOIL sample at 1.0' bgs for TOTAL Pb.

Sketch Location:



Logged BY / Date: Jeff Tan / 5-27-09 *Reviewed BY / Date:* _____

ANALYSIS REQUEST/CHAIN-OF-CUSTODY RECORDS

CHAIN OF CUSTODY

EMAX LABORATORIES, INC.
1835 W. 205th Street, Torrance, CA 90501
Tel #: 310-618-8889 Fax #: 310-618-0818
Email: info@emaxlabs.com

PO NUMBER: 504080
SAMPLE STORAGE

EMAX CONTROL NO. * 09E806
PROJECT CODE:

CLIENT: U.S. Army
PROJECT: Fort McClellan
COORDINATOR: Jeff Tarr-Shaw
TEL (256) 310-4376 FAX EMAIL
SEND REPORT TO: Randy McBride
COMPANY: Shaw Environmental Inc.,
ADDRESS: 312 Directors Drive
Knoxville, TN 37923
EMAX PM: Molly N.

MATRIX CODE	PRESERVATIVE CODE
DW=Drinking Water	IC = Ice
GW=Ground Water	HC = HCl
WW=Waste Water	HN=HNO3
SD=Solid Waste SL=Sludge	SH=NaOH
SS=Soil/ Sediment	ST=Na2S2O3
WP=Wipes PP=Pure Products	ZA=Zinc Acetate
AR=Air	HS=H_2SO_4
O=	

ANALYSIS REQUIRED: TCLP metals 6010/7470A; Total Pb 6010B; Total Pb 6010B

TAT
- [x] Rush 24 hrs. AND 72 Hr
- [ ] Rush ____ days
- [ ] 7 days
- [ ] 14 days
- [ ] 21 days
- [ ] 30 days
- [ ] ____ days
- [ ]

LAB	SAMPLE ID CLIENT	SAMPLING LOCATION	DATE	TIME	CONTAINER NO.	SIZE	TYPE	MATRIX CODE	QC	PRESERVATIVE CODE	COMMENTS
1	XX0310	IDW	5/27/09	1230	1	40z	glass	SS		IC	72 Hour TAT
2	HE0026	SA2-70-Comp 1	5/27/09	1130	1	40z	glass	SS		IC	24 Hour TAT
3	HE0027	SA2-70-Comp 2	5/27/09	1200	1	40z	glass	SS		IC	24 Hour TAT
4											
5											
6											
7											
8											
9											
0											

Instructions

Cooler #	Temp. (°C)	Sample #s
1	3.7	

SAMPLER

COURIER/AIRBILL

RELINQUISHED BY	Date	Time	RECEIVED BY
Jeff Tarr	5/27/09	3:50	
	5/28/09	0930	

NOTICE: Turn-around-time (TAT) for samples shall not begin untill all discrepancies have been resolved. For samples received and discrepacies resolved after 1500 hrs, TAT shall start at 0800 hrs the next business day. The client is responsible for all cost associted with sample disposal. Samples shall be disposed of as soon as practical (but not prior to fifteen (15) calendar days) after issuance of analytical report unless a different sample disposal schedule is pre-arranged with EMAX. Disposal fee for samples defined by CA Title 22 as non-hazardous shall be $5.00 per sample. EMAX will return hazardous samples to the client at the client's expense unless directed in writing otherwise.

APPENDIX B

LABORATORY ANALYTICAL DATA

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

RANGE 12

FENCE

Date: 06-15-2009
EMAX Batch No.: 09E306

Attn: Randy McBride

Shaw E&I
312 Directors Dr.
Knoxville TN 37923-4799

Subject: Laboratory Report
Project: Fort McClellan

Enclosed is the Laboratory report for samples received on 05/28/09.
The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
XX0310	E306-01	05/27/09	SOIL	METALS TCLP
				MERCURY TCLP
HE0026	E306-02	05/27/09	SOIL	LEAD
HE0027	E306-03	05/27/09	SOIL	LEAD

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Acting Laboratory Director

EMAX certifies that the results included in this report meet all NELAC requirements unless noted in the Case Narrative.

CASE NARRATIVE

Client : SHAW E&I

Project : FORT MCCLELLAN

SDG : 09E306

METHOD 3050B/6010B
LEAD BY ICP

A total of two (2) soil samples were received on 05/28/09 for Lead analysis, Method 3050B/6010B in accordance with USEPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

Holding Time
Samples were analyzed within the prescribed holding time.

Calibration
Initial Calibration was established as prescribed by the method and was verified using a secondary source. Interference checks were performed and results were within required limits. Continuing calibration verifications and continuing calibration blanks were carried out at a frequency specified by the project. All calibration requirements were within acceptance criteria.

Method Blank
Method blank was analyzed at the frequency required by the project. For this SDG, one method blank was analyzed with the samples. Result was compliant to project requirement.

Lab Control Sample
A set of LCS/LCD was analyzed with the samples in this SDG.
Percent recoveries for IPE067SL/C were all within QC limits.

Matrix QC Sample
No matrix QC sample was designated for this SDG. Analytical spike and serial dilution were analyzed for matrix interference evaluation. Results were within method acceptance criteria.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. All project requirements were met otherwise anomalies were discussed within the associated QC parameter.

LAB CHRONICLE
LEAD BY ICP

Client : SHAW E&I
Project : FORT MCCLELLAN

SDG NO. : 09E306
Instrument ID : T-ID8

SOIL

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1S	IPE067SB	1	NA	05/28/0920:14	05/28/0913:20	ID8E026056	ID8E026054	IPE067S	Method Blank
LCS1S	IPE067SL	1	NA	05/28/0920:19	05/28/0913:20	ID8E026057	ID8E026054	IPE067S	Lab Control Sample (LCS)
LCD1S	IPE067SC	1	NA	05/28/0920:24	05/28/0913:20	ID8E026058	ID8E026054	IPE067S	LCS Duplicate
171-SB01D-SS2.0AS	E311-05A	1	4.5	05/28/0920:29	05/28/0913:20	ID8E026059	ID8E026054	IPE067S	Analytical Spike Sample
171-SB01D-SS2.0	E311-05	1	4.5	05/28/0920:34	05/28/0913:20	ID8E026060	ID8E026054	IPE067S	Field Sample
171-SB01D-SS2.0DL	E311-05J	5	4.5	05/28/0920:39	05/28/0913:20	ID8E026061	ID8E026054	IPE067S	Diluted Sample
HE0026	E306-02	1	16.6	05/29/0911:26	05/28/0913:20	ID8E027013	ID8E027011	IPE067S	Field Sample
HE0027	E306-03	1	16.2	05/29/0911:31	05/28/0913:20	ID8E027014	ID8E027011	IPE067S	Field Sample

FN - Filename
% Moist - Percent Moisture

METHOD 3050B/6010B
LEAD BY ICP

Client	: SHAW E&I	Date Collected:	05/27/09 11:30
Project	: FORT MCCLELLAN	Date Received:	05/28/09
SDG NO.	: 09E306	Date Extracted:	05/28/09 13:20
Sample ID:	HE0026	Date Analyzed:	05/29/09 11:26
Lab Samp ID:	E306-02	Dilution Factor:	1
Lab File ID:	ID8E027013	Matrix :	SOIL
Ext Btch ID:	IPE067S	% Moisture :	16.6
Calib. Ref.:	ID8E027011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Lead	15.9	1.20	0.240

RL: Reporting Limit

METHOD 3050B/6010B
LEAD BY ICP

Client	: SHAW E&I	Date Collected:	05/27/09 12:00
Project	: FORT MCCLELLAN	Date Received:	05/28/09
SDG NO.	: 09E306	Date Extracted:	05/28/09 13:20
Sample ID:	HE0027	Date Analyzed:	05/29/09 11:31
Lab Samp ID:	E306-03	Dilution Factor:	1
Lab File ID:	ID8E027014	Matrix :	SOIL
Ext Btch ID:	IPE067S	% Moisture :	16.2
Calib. Ref.:	ID8E027011	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Lead	10.3	1.19	0.239

RL: Reporting Limit

CASE NARRATIVE

Client : SHAW E&I

Project : FORT MCCLELLAN

SDG : 09E306

METHOD 1311/3010A/6010B
TCLP METALS BY ICP

One (1) soil sample was received on 05/28/09 for Metals TCLP analysis, Method 1311/3010A/6010B in accordance with USEPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

Holding Time
The sample was analyzed within the prescribed holding time.

Calibration
Initial Calibration was established as prescribed by the method and was verified using a secondary source. Interference checks were performed and results were within required limits. Continuing calibration verifications and continuing calibration blanks were carried out at a frequency specified by the project. All calibration requirements were within acceptance criteria.

Method Blank
Method blanks were analyzed at the frequency required by the project. For this SDG, two (2) method blanks were analyzed with the samples. All results were compliant to project requirement. Refer to QC result summary forms for details.

Lab Control Sample
A set of LCS/LCD was analyzed with the samples in this SDG.
Percent recoveries for IPF001WL/C were all within QC limits.

Matrix QC Sample
Matrix QC sample was analyzed at a frequency prescribed by the project.
Percent recoveries were within project QC limits except for results qualified with [*] in E306-01M/S summary form, most likely due to matrix interference. Check QC summaries form for details. In addition Analytical spike and serial dilution were analyzed for matrix interference evaluation. Results were within method acceptance criteria.

Sample Analysis
The sample was analyzed according to prescribed analytical procedures. All project requirements were met otherwise anomalies were discussed within the associated QC parameter.

LAB CHRONICLE
TCLP METALS BY ICP

Client : SHAW E&I
Project : FORT MCCLELLAN

SDG NO. : 09E306
Instrument ID : T-ID8

LEACHATE

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	IPF001WB	1	NA	06/02/0903:55	06/01/0909:15	ID8F002118	ID8F002116	IPF001W	Method Blank
LCS1W	IPF001WL	1	NA	06/02/0904:00	06/01/0909:15	ID8F002119	ID8F002116	IPF001W	Lab Control Sample (LCS)
LCD1W	IPF001WC	1	NA	06/02/0904:05	06/01/0909:15	ID8F002120	ID8F002116	IPF001W	LCS Duplicate
MBLK1S	TXE011SB	5	NA	06/02/0904:10	06/01/0909:15	ID8F002121	ID8F002116	IPF001W	Method Blank
XX0310AS	E306-01A	5	NA	06/02/0904:15	06/01/0909:15	ID8F002122	ID8F002116	IPF001W	Analytical Spike Sample
XX0310	E306-01	5	NA	06/02/0904:20	06/01/0909:15	ID8F002123	ID8F002116	IPF001W	Field Sample
XX0310DL	E306-01J	25	NA	06/02/0904:25	06/01/0909:15	ID8F002124	ID8F002116	IPF001W	Diluted Sample
XX0310MS	E306-01M	5	NA	06/02/0904:30	06/01/0909:15	ID8F002125	ID8F002116	IPF001W	Matrix Spike Sample (MS)
XX0310MSD	E306-01S	5	NA	06/02/0904:35	06/01/0909:15	ID8F002126	ID8F002116	IPF001W	MS Duplicate (MSD)

FN - Filename
% Moist - Percent Moisture

METHOD 1311/3010A/6010B
TCLP METALS BY ICP

Client	: SHAW E&I	Date Collected:	05/27/09 12:30
Project	: FORT MCCLELLAN	Date Received:	05/28/09
SDG NO.	: 09E306	Date Extracted:	06/01/09 09:15
Sample ID:	XX0310	Date Analyzed:	06/02/09 04:20
Lab Samp ID:	E306-01	Dilution Factor:	5
Lab File ID:	ID8F002123	Matrix :	LEACHATE
Ext Btch ID:	IPF001W	% Moisture :	NA
Calib. Ref.:	ID8F002116	Instrument ID :	EMAXTID8

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
Arsenic	ND	0.0500	0.0250
Barium	0.502	0.0500	0.0100
Cadmium	ND	0.0500	0.00500
Chromium	ND	0.100	0.0125
Lead	0.506	0.0500	0.0150
Selenium	ND	0.0500	0.0250
Silver	ND	0.100	0.0150

TCLP EXTRACTION DATE: 05/28/09 19:15

CASE NARRATIVE

Client : SHAW E&I

Project : FORT MCCLELLAN

SDG : 09E306

METHOD 1311/7470A
TCLP MERCURY

One(1) soil sample was received on 05/28/09 for Mercury TCLP analysis, Method 1311/7470A in accordance with USEPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

Holding Time
The sample was analyzed within the prescribed holding time.

Calibration
Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source. Continuing calibration verifications were carried out at a frequency specified by the project. All calibration requirements were within acceptance criteria.

Method Blank
Method blanks were analyzed at the frequency required by the project. For this SDG, two (2) method blanks were analyzed with the samples. All results were compliant to project requirement. Refer to QC result summary forms for details.

Lab Control Sample
A set of LCS/LCD was analyzed with the samples in this SDG.
Percent recoveries for HGF002WL/C were all within QC limits.

Matrix QC Sample
Matrix QC sample was analyzed at a frequency prescribed by the project.
Percent recoveries for E306-01M/S were within project QC limits.
In addition Analytical spike and serial dilution were analyzed for matrix interference evaluation. Results were within method acceptance criteria.

Sample Analysis
The sample was analyzed according to prescribed analytical procedures. All project requirements were met otherwise anomalies were discussed within the associated QC parameter.

METHOD 1311/7470A
TCLP MERCURY

Client : SHAW E&I
Project : FORT MCCLELLAN
Batch No. : 09E306

Matrix : LEACHATE
Instrument ID : TI047

SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DLF	MOIST	RL (ug/L)	MDL (ug/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	HGF002WB	ND	1	NA	0.500	0.150	06/01/0918:40	06/01/0913:00	M47F001043	M47F001032	HGF002W	NA	06/01/09
LCS1W	HGF002WL	5.15	1	NA	0.500	0.150	06/01/0918:47	06/01/0913:00	M47F001046	M47F001044	HGF002W	NA	06/01/09
LCD1W	HGF002WC	5.17	1	NA	0.500	0.150	06/01/0918:49	06/01/0913:00	M47F001047	M47F001044	HGF002W	NA	06/01/09
MBLK1S	TXE011SB	ND	10	NA	5.00	1.50	06/01/0919:39	06/01/0913:00	M47F001070	M47F001068	HGF002W	NA	06/01/09
XX0310AS	E306-01A	47.3	10	NA	5.00	1.50	06/01/0919:41	06/01/0913:00	M47F001071	M47F001068	HGF002W	05/27/09	05/28/09
XX0310	E306-01	ND	10	NA	5.00	1.50	06/01/0919:43	06/01/0913:00	M47F001072	M47F001068	HGF002W	05/27/09	05/28/09
XX0310DL	E306-01J	ND	50	NA	25.0	7.50	06/01/0919:45	06/01/0913:00	M47F001073	M47F001068	HGF002W	05/27/09	05/28/09
XX0310MS	E306-01M	46.2	10	NA	5.00	1.50	06/01/0919:47	06/01/0913:00	M47F001074	M47F001068	HGF002W	05/27/09	05/28/09
XX0310MSD	E306-01S	46.7	10	NA	5.00	1.50	06/01/0919:49	06/01/0913:00	M47F001075	M47F001068	HGF002W	05/27/09	05/28/09

RL: Reporting Limit
TCLP Extraction Date: 05/28/09 19:15

APPENDIX C

WASTE TRANSPORTATION AND DISPOSAL DOCUMENTATION

WASTE PROFILE FORM

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

SOLID WASTE PROFILE SHEET

(Please Print or Type - Black Ink Only)

Check one: ☐ New Certification ☑ Recertification ☐ Modification to a current certification (attach an explanation of the changes)

Waste Profile #: 050044 Certification #: SW-113006-0022

GENERAL INFORMATION

Generator

Name: U.S. Army Garrison-Transition Force

Location: 291 Jimmy Parks Blvd.
Fort McClellan, Alabama 36205-5000

County:

USEPA ID Number: AL4210020562

Mailing Address: 291 Jimmy Parks Blvd.
Fort McClellan, Alabama 36205-5000

Contact

Name: Mr. Scott Bolton

Title: Site Manager – Environmental Coordinator

Telephone: 1-256-848-3847

Submitted by (if different from above):

Company

Name: Veolia Cedar Hill Landfill

Mailing Address: 1319 No Business Creek Road
Ragland, Alabama 35131

Contact

Name: Bert Broome

Telephone: 1-256-368-3560 or 1-256-653-3055

WASTE INFORMATION

Process Generating the Waste:
Interim removal action of metals-contaminated soil at a small arms range near Iron Mountain Road (IMR) at Fort McClellan (FTMC), Anniston, Alabama. Work performed by Shaw in accordance with Contract DACA21-96-D-0018-USACE.

Waste Name:
Treated metals-contaminated soil at area within the Alabama Department of Transportation (ALDOT) proposed EBC.

If this waste is subject to the corrective action regulations of 40 CFR Part 280 (underground storage tank program), supply the following:

UST Facility Identification # ___-___-___ UST Incident # UST___-___-___

If this is petroleum-contaminated waste, what is the source of the contamination (e.g., gasoline, diesel, hydraulic oil, etc.)? NA

Does this waste contain any of the following (give the concentration)?: ☐ PCBs _____ppm ☐ Cyanides _____ppm ☐ Sulfides _____ppm

WASTE PROPERTIES

Physical State:

Solid ☑
Bladeable Sludge ☐
Liquid ☐
Solid/Liquid Combination ☐

If the waste is liquid or contains free liquid:

% Free Liquids: _____
pH: _____
Flash Point: _____
Solidified prior to disposal? _____

WASTE DISPOSITION

If this is foundry waste, is it disposed (used as fill material) in accordance with ADEM Admin. Code R. 335-13-4-.26(3)? NA

Proposed Landfill(s): Name: Veolia Cedar Hill Landfill Permit #: 58-01

Name: _____ Permit #: _____

CERTIFICATION

I certify under penalty of law that this waste material does not contain regulated medical waste, regulated PCB waste, or hazardous waste which is not conditionally exempt from Division 14 Regulations. I further certify that, at the point of disposal, this waste material will not contain any free liquids. This document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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 submitted 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.

Scott J. Bolton
Name (type or print)

Site Manager
Title

Scott J. Bolton
Signature

7MAY09
Date

Profile Number 050044

Certification Number SW-113006-0022

ADEM FORM 300 1/06m1

NON-HAZARDOUS SPECIAL WASTE MANIFESTS

243999
1.05

VEOLIA
ENVIRONMENTAL SERVICES

Solid Waste
North America

Star Ridge Landfill
3301 Acmar Road
Moody, Alabama 35004
Phone 205-640-9430
Fax 205-640-3719

Cedar Hill Landfill
1319 No Business Creek Road
Ragland, Alabama 35131
Phone 205-338-7821
Fax 205-338-1062

NON-HAZARDOUS SPECIAL WASTE MANIFEST

NO. 061509-01

GENERATOR INFORMATION

Generator: US Army Garrison Transition Force
Address: 291 Jimmy Parks Blvd.
Ft. McClellan Alabama 36205
Phone: 256-848-3847 Scott Bolton

Site: Iron Mountain Rd
Adress: Ft. McClellan Alabama
Phone:

Waste Description	Profile Number	Total Quantity	Unit of Measure	Container Type
Metals Contaminated Soils	050044	Estimated 1-2	CY	Roll-off

I hereby certify that the above described materials are not hazardous wastes as defined by 40CFR Part 261 and is not infectious or is not regulated pursuant to applicable federal and state law, have been fully and accurately described, classified and packaged and are in proper condition for transportation according to applicable regulations.

Elizabeth V. Mathis
Generator Authorized Agent Name (Print Here)

x Elizabeth V. Mathis
Signature Date

TRANSPORTER INFORMATION

Transporter Name (Print): Veolia Environmental Services
Address: 1430 Speedway Blvd
Lincoln Alabama 35096

Driver Name (Print): Norman McDill
Truck Number: 417
Truck Type: Roll-off

I hereby acknowledge receipt of the above described materi
for transport from the generators site listed above.

Norman E McDill 6-15-09
Driver Signature Shipment Date

I hereby acknowledge that the above described materials were received from the generators site and were transported without incident to the destination listed below.

Norman E McDill 6-15-09
Driver Signature Delivery Date

DISPOSAL FACILITY DESTINATION

Site Name: Veolia Cedar Hill Landfill
Site Address: 1319 No Business Creek Road, Ragland Alabama 35131
Phone: 205-338-7821
Disposal Location: Same as site address.

I hereby acknowledge receipt of the above described materials.

Amber Williams
Name of authorized agent (Print)

Amber Williams 6/15/09
Signature Receipt Date

Original: Landfill Yellow:Generator Pink: Transporter Goldenrod:Generator

DISPOSAL FACILITY WEIGH TICKETS

Veolia ES Cedar Hill Landfill, Inc. 0000 000000 S1
1319 No Business Creek Road
Ragland, AL 35131

15 June 2009 2:06 pm
Ticket: 243999 15 June 2009 2:29 pm
000001 - 0003LINCOLN
Reference:

Gross Weight 36,320.00 lb
Tare Weight 34,220.00 lb
Vehicle: SS417-OT Net Weight 2,100.00 lb 1.05 TN

Contract: 050044 050044 USAG SHAW PO502994 O

Quantity	Unit	Description		Rate	Tax	Total
1.05	TN	CS	CONTAMINATED SOIL			

Net Amount:

FAILURE TO RETURN SAFETY HATS AND VESTS WILL RESULT IN A $25.00 CHARGE

Weighmaster: AMBER L WILLIAMS Driver

ADEM WASTE CERTIFICATION APPROVAL LETTER

ONIS "TREY" GLENN, III
DIRECTOR

BOB RILEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2059 ♦ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700
FAX (334) 271-7950

06/05/2009

MR BERT BROOME
VEOLIA ENVIRONMENTAL SERVICES
1319 NO BUSINESS CREEK RD
RAGLAND AL 35131

RE: Waste Certification
Metals contaminated soil

Dear MR BROOME:

The Alabama Department of Environmental Management has reviewed your waste certification received on 05/11/2009 and has assigned a Certification Number for this waste as shown below.

Waste Profile #:050044
Certification #SW-063011-0008
Expiration Date of Certification: 06/30/2011

US Army Garrison-Transition Force
291 Jimmy Parks Blvd
Fort McClellan AL 36205

In your certification you requested one or more landfills be approved to receive your waste. Based on our review of the waste and the landfills requested, the waste is approved for disposal in the following landfills:

Veolia Cedar Hill LF 58-01

You should provide this approval letter to the landfill to be used and contact the landfill to determine any special handling requirements for this waste prior to delivery to the landfill. According to ADEM regulations, the landfill may not receive this waste unless it has received a waste certification approval.

If this waste will be generated on a routine basis (not a one-time occurrence), another written certification of this waste should be submitted to ADEM prior to expiration of the certification number. Each recertification submitted should include a completed Solid Waste Profile Sheet, any supporting documentation, and the appropriate fee. This approval letter does not exempt US Army Garrison-Transition Force from complying with applicable requirements of the ADEM Hazardous Waste Program regulations.

If you submitted the certification via facsimile, hard copies of all documents should be forwarded to ADEM as soon as possible.

If you have any questions concerning this approval or the approval process, please contact Ms. Lynn T. Roper at 334-271-7728.

Sincerely,

James L. Bryant, PE
Chief, Environmental Services Branch

JLB/gs

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (Fax)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (Fax)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (Fax)

Mobile - Coastal
4171 Commanders Drive
Mobile, AL 36615-1421
(251) 432-6533
(251) 432-6598 (Fax)

APPENDIX D

PROJECT PHOTOGRAPHS

RANGE 12 SUPPLEMENTAL SOIL REMOVAL AND EROSION CONTROL
MAY/JUNE 2009

Photo showing repairs/improvements to erosion control planking along hillside.

RANGE 12 SUPPLEMENTAL SOIL REMOVAL AND EROSION CONTROL
MAY/JUNE 2009

Photo showing repairs/improvements to erosion control planking along hillside

Photo showing repairs/improvements to erosion control planking and silt fence

RANGE 12 SUPPLEMENTAL SOIL REMOVAL AND EROSION CONTROL
MAY/JUNE 2009

Roll-off box containing sloughed soil/rock that was removed during fieldwork.

Application of grass seed/BFM mixture onto hillside following supplemental soil removal and planking/silt fence repairs.

RANGE 12 SUPPLEMENTAL SOIL REMOVAL AND EROSION CONTROL
MAY/JUNE 2009

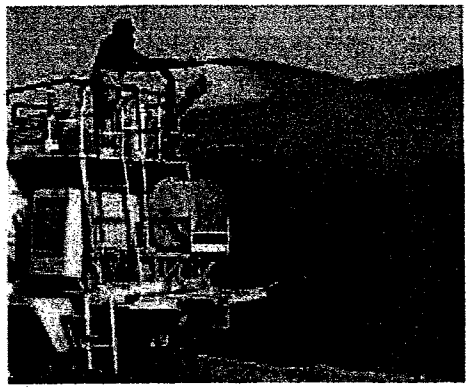
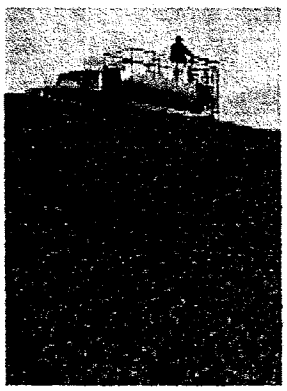
Hillside – post-application of grass seed/BFM mixture.

APPENDIX E

SUPPLEMENTAL INFORMATION FOR BFM MATERIAL

Hydro-Blanket® BFM

Bonded Fiber Matrix


The Best Slope Protection at the Lowest Overall Cost

HYDRO-BLANKET® BFM BONDED FIBER MATRIX CONTROLS EROSION ON STEEP SLOPES IN A QUICK, SAFE, EASY HYDRAULIC APPLICATION.

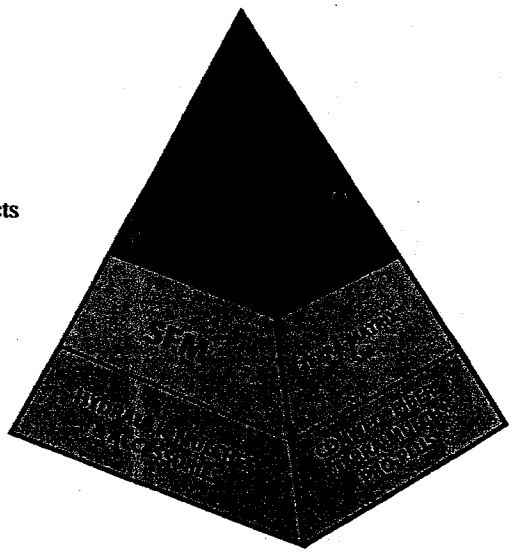
It is less expensive and faster to install than blankets or sod and more effective than blankets, competitive BFMs and conventional hydraulic mulches. Extensive testing proves that Hydro-Blanket BFM controls erosion more completely than competitive BFMs on steep slopes subjected to heavy rains. The combination of Thermally Refined™ wood fibers and multi-dimensional tackifiers provides greater water holding capacity for more complete germination and faster vegetation establishment. Proprietary cross-linked,hydro-colloid tackifiers and activators anchor the fiber mulch matrix to the soil surface.

HYDRO-BLANKET® BFM

- Dries to form a breathable, built-in-place blanket
- Contours with the surface to maintain intimate soil contact
- Less expensive and faster to install versus blankets or sod
- Environmentally safe and biodegradable
- Greater coverage than other BFMs for more cost-efficient application
- Replaces Conwed Fibers® Hydro-Mulch® 2500 and Terra-Mulch® BFM products

LEADING THE INDUSTRY

Profile Products LLC is the world's largest producer of erosion control blankets, hydraulic mulches, flexible growth media, bonded fiber matrices, storm water treatment devices and complementary accessories. Many of today's standards were innovations introduced by Profile. Those products, along with on-site consultation and on-going service comprise Profile Erosion Control Solutions™ (PECS). PECS is designed to help you find the most cost-effective means of controlling erosion, establishing vegetation and ensuring NPDES Phase II Compliance.



THE PROFILE PERFORMANCE PYRAMID
Hydro-Blanket is the industry's most effective BFM

Hydro-Blanket® BFM Specification

The Bonded Fiber Matrix (BFM) shall be a hydraulically applied flexible erosion control blanket composed of long strand, thermally processed wood fibers and a proprietary crosslinked, hydro-colloid tackifier. The BFM may require a 24-48 hour curing period to achieve maximum performance. Once cured, the BFM forms an intimate bond with the soil surface to create a continuous, absorbent, flexible and biodegradable erosion resistant blanket that allows for rapid germination and accelerated plant growth.

The BFM shall be Hydro-Blanket® BFM, and conform to the following property values when uniformly applied at a rate of 3500 pounds per acre (3900 kilograms/hectare) under laboratory conditions.

PHYSICAL			
Mass Per Unit Area	ASTM D-6566	11.5 oz/yd²	390 g/m²
Thickness	ASTM D-6525	0.12 in	3 mm
% Ground Cover	ASTM D-6567	99%	99%
Water Holding Capacity	Profile Products[2]	1350%	1350%
Cure Time	Observed	24-48 hr	24-48 hr
Color (fugitive dye)	Observed	Green	Green
ENDURANCE			
Functional Longevity	Observed	Up to 8 months	Up to 8 months
PERFORMANCE			
Cover Factor[3] (6 in/hr event)	ECTC Test Method #2	0.10	0.10
% Effectiveness[4]	ECTC Test Method #2	90%	90%
Vegetation Establishment	ECTC Test Method #4	600%	600%

1. ASTM and ECTC (Erosion Control Technology Council) test methods developed for Rolled Erosion Control Products.

2. Water Holding Capacity test developed by Profile Products LLC.

3. Cover Factor is calculated as soil loss ratio of treated surface versus an untreated control surface.

4. % Effectiveness = One minus Cover Factor multiplied by 100%.

COMPOSITION

All components of the BFM shall be pre-packaged by the Manufacturer to assure material performance and in compliance with the following values. **Under no circumstances will field mixing of additives or components be accepted.**

Thermally Processed Wood Fibers – 79.5% ± 2.5%
Proprietary Crosslinked Hydro-Colloid Tackifier – 10% ± 1%
Moisture Content – 10.5% ± 1.5%

INSTALLATION

Strictly comply with manufacturer's installation instructions and recommendations. Use approved hydro-spraying machines with fan-type nozzle (50-degree tip) whenever possible to achieve best soil coverage. Apply BFM from opposing directions to assure 95% soil surface coverage. Slope interruption devices or water diversion techniques are recommended when slope lengths exceed 70 ft (21m).

Erosion Control and Revegetation:

Step One: Apply seed, fertilizer and other soil amendments with a small amount of BFM for visual metering.

Step Two: Mix 50 lb of BFM per 125 gallons (23 kg/475 liters) of water over freshly seeded surfaces; confirm loading rates with equipment manufacturer.

≤ 3H to 1V	3000 lb/ac	3400 kg/ha
>3H to 1V and ≤2H to 1V	3500 lb/ac	3900 kg/ha
>2H to 1V and ≤1H to 1V	4000 lb/ac	4500 kg/ha
Below ECB or TRM	1500 lb/ac	1700 kg/ha
As infill for TRM	3500 lb/ac	3900 kg/ha

Consult comprehensive CSI formatted BFM specification for additional details.

PACKAGING

Bags: Net Weight - 50 lb, UV resistant plastic film.
Pallets: Weather-proof, stretch-wrapped with UV resistant pallet cover, 40 bags/pallet, 1 ton/pallet.

Profile®

Your Trusted Partner In Soil Solutions

IECA

For technical information call 1-866-325-6262. For distributor location and customer service call 1-800-366-1180.

750 Lake Cook Road · Suite 440 · Buffalo Grove, IL 60089

www.profileproducts.com

HBFM-01 2/05