CORRECTIVE ACTION UNIT EVALUATION FOR ASSORTED UNITS (SSA 70, 80, SWMU 61) AT RADFORD ARMY AMMUNITION PLANT

RFAAP, Radford Virginia

RCRA Corrective Action Permit Number VA 1210020730

Prepared for:

Alliant Techsystems
Route 114
Radford, Virginia 24143

Prepared by:

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Project #: 10-751

August 2010

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Environmental, Engineering and Educational Solutions

CORRECTIVE ACTION UNIT EVALUATION FOR THE HEAVY EQUIPMENT MAINTENANCE SHOP TRACTOR STEAM CLEAN OIL WATER SEPARATOR (SSA 70), THE DRAINAGE DITCH FOR C-LINE WASTEWATER TREATMENT AND PLANT RUNOFF (SSA 80), AND THE MOBILE WASTE OIL TANKS (SWMU 61)

1.0 EXECUTIVE SUMMARY

As defined in the February 23, 2010 meeting between representatives of Radford Army Ammunition Plant (RFAAP) and US EPA Region III, specific Site Screening Areas (SSAs) would be grouped either programmatically or geographically to more effectively evaluate the criteria for their inclusion in the upcoming renewal of RCRA Corrective Action Permit VA 1210020730. The Units discussed herein are SSAs that:

- Serve as oil water separator facility for the heavy equipment maintenance shop steam clean system (SSA 70);
- Serve as the ditched conveyance for C-line wastewater treatment and plant runoff (SSA 80); and,
- Serve as mobile waste oil tanks (SWMU 61).

SSA 80 is located within an active production area of the RFAAP Facility. SSA 70 has been inactive since 2000, and there are no plans to re-activate the unit. The mobile waste oil tanks are no longer present at the RFAAP, as they were closed out and scrapped in compliance with the recent Spill Prevention, Control, and Countermeasures (SPCC) regulations.

The C-line drainage ditch (SSA-80) is located immediately adjacent The C-Line Acidic Wastewater Treatment Plant (Bldg. 420-2), which is an active facility that treats acidic wastewater generated from the Nitroglycerin No. 1 and C-Line Nitrocellulose production areas. The drainage ditch is monitored under the Stormwater Pollution Prevention Plan (SWPP) or Virginia Pollutant Discharge Elimination System (VPDES) permits.

Accordingly, as described below, it is appropriate to remove these units from further consideration under the Facility RCRA Corrective Action Permit.

2.0 INTRODUCTION AND BACKGROUND

In accordance with the RCRA Corrective Action Permit VA 1210020730, the scope of this investigation has been determined by the RFAAP and the US EPA (the parties). See Part II –

Specific Facility Conditions – Section D.7 below. The language in bold provides the regulatory basis for the scope of this investigation:

"D- 7. Attachment A contains a list of thirty-one (31) identified Site Screening Areas (SSAs) which may pose a threat, or potential threat to human health and the environment. The Permittee shall submit to the EPA and the VDEQ SSP Work Plan(s) which shall outline the activities necessary to determine if there have been releases of hazardous substances, solid wastes, pollutants, contaminants, hazardous wastes, or hazardous constituents to the environment from the SSAs. ***The scope of the SSPs shall be determined by the Parties****. The SSP Work Plan(s) shall include a proposed Deadline or Milestone for the submittal of an SSP Report(s)…."*

Each of the Units described in this report are located at the RFAAP Facility. The Heavy Equipment Maintenance Shop (Building 9388) was constructed in 1941 to service heavy equipment for plant operations. The Tractor Cleaning Area (Building A-9388), located immediately adjacent to the maintenance shop, is a concrete pad with a 3" high concrete curb around the sides of the pad. Heavy equipment was steam cleaned on this pad from 1941 to 2000, and the oily residue was drained from the pad into a below grade oil water separator (**Figure 1**). The original oil water separator was replaced in 1999 with a 550-gallon oil water separator. Operations at the Tractor Cleaning area were suspended in 2000. There are no plans to re-activate the Unit.

SSA-80 is a grass lined storm water runoff drainage ditch system located immediately adjacent, (north and south), to the C-Line treatment facility, and routinely contains flowing water. Storm water runoff collected in the ditches around the C-Line treatment plant flows directly to the New River via Outfall 005, but is not treated at the C-Line treatment plant (**Figure 2**). Steam condensate from the C-Line facility also drains into the storm water ditch system. The ditch has no record of being contaminated by chemical spills.

The Mobile Waste Oil Tanks listed as SWMU 61 were shop-built above ground tanks of approximately 100-gallon capacity that were mounted to trailers for the collection and storage of used oil from various vehicles and stationary equipment located throughout the RFAAP. The mobile tanks have no record of spills. These mobile tanks are no longer present at the RFAAP, as they were closed out and scrapped in compliance with the recent Spill Prevention, Control, and Countermeasures (SPCC) regulations.

Current land use for SSA 70, 80, and SWMU 61 is defined as industrial/commercial. It is not reasonable to assume that the RFAAP will ever be utilized for residential purposes.

3.0 UNIT DESCRIPTION AND EVALUATION

3.1 SSA 70: HEAVY EQUIPMENT MAINTENANCE SHOP TRACTOR STEAM CLEANING AREA

Historical Information of Site

1941-2000: The Heavy Equipment Maintenance Shop (Building 9388) was constructed in 1941 to service heavy equipment for plant operations. The Tractor Cleaning Area (Building A-9388), located immediately adjacent to the maintenance shop, is a concrete pad with a 3" high concrete curb around the sides of the pad (**Figure 1**). Heavy equipment was steam cleaned on this pad from 1941 to 2000, and the oily residue was drained from the pad into a below grade oil water separator. Curbing around the concrete pad was designed to prevent runoff from flowing onto the ground. Water from the oil water separator was discharged into a nearby storm water ditch, while the oily residue was collected and disposed of off-site.

Additionally, in the mid to late 1990's, the RFAAP removed several underground storage tanks, and hauled them to the tractor cleaning area to be cleaned before being disposed of off-site.

1999-2000: The original oil water separator was replaced in 1999 with a 550-gallon capacity oil water separator capable of handling a flow of 55 gallons per minute. The water discharge from the separator was tied into an existing sanitary sewer line, and the oily residue was collected and disposed of off-site. The Tractor Cleaning Area was rendered inactive in 2000, and no plans exist to activate the facility.

Spill / Cleanup Records of Site

Discolored soil and gravel was evident around the concrete pad / oil water separator area, indicating oily water escaped the curbing at various times; however, no records exist of such overflows. The discolored soil and gravel were removed during installation of the 550-gallon capacity oil water separator in 1999 and replaced with clean fill.

Historical Studies and Investigations Conducted at SSA-70

RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 115

Migration Pathways Analysis

- Soil and Groundwater: The soil surrounding the original oil water separator was removed during the installation of the 550-gallon capacity oil water separator in 1999 and

was replaced with clean fill. No volatile organic or semivolatile organic compounds were detected in samples analyzed from the excavated soil (see **Attachment 3**). The oil water separator is constructed of fiberthane coated carbon steel. The unit is in good repair and exhibits no loss of integrity. The integrity of the tank prohibits the infiltration of water contained in the unit to soil and groundwater. (See **Photo Number 1**).

- Surface Water: The soil surrounding the original oil water separator was removed during installation of the 550-gallon oil water separator in 1999. The separator collects oily residue from a curbed concrete pad designed to prevent runoff from flowing onto the ground. Recovered water from the oil water separator is discharged into the sanitary sewer system.

- **Basis for Removal from the RCRA Corrective Action Permit**

Oily water would be considered a non-hazardous petroleum product under RCRA, and as such any spills are not regulated under RCRA. This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that reportable quantities of listed hazardous substances/wastes have been released to the environment from this facility.

3.2 SSA 80: DRAINAGE DITCH FOR C-LINE WASTEWATER TREATMENT AND PLANT RUNOFF (NORTH OF BUILDING 420-2)

SSA-80 is a grass lined storm water runoff drainage ditch system located immediately adjacent, (north and south), to the C-Line treatment facility, and routinely contains flowing water (**Figure 2**). Storm water runoff collected in the ditches around the C-Line treatment plant flows directly to the New River via Outfall 005, but is not treated at the C-Line treatment plant. Steam condensate from the C-Line facility also drains into the storm water ditch system. The ditch has no record of being contaminated by chemical spills.

Historical Information of Site

1942-Present: SSA-80 is located immediately adjacent The C-Line Acidic Wastewater Treatment Plant (Bldg. 420-2), which is an active facility that began operations in 1942 to treat acidic wastewater (pH <2) generated from the Nitroglycerin No. 1 and C-Line Nitrocellulose production areas. Additionally, in 1985, effluent from the Sulfuric Acid Recovery Plant (Oleum Plant) Wastewater Treatment Facility (SSA-18; Bldg. 4330) was directed to the C-Line facility. The C-Line Acidic Wastewater Treatment Plant currently receives low volumes of acidic wastewater from various sources.

Spill / Cleanup Records of Site

No employees recalled any records of chemical spills into the ditch or cleanup actions performed in the area. The 1987 RFA noted there were no visible signs of releases in the vicinity of this site.

Historical Studies and Investigations Conducted at SSA-80

RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, pages 125

Migration Pathways Analysis

- Soil, Groundwater and Surface Water: Laboratory analysis of soil from the ditch (**Attachment 3**) indicates that soil pH has not increased or decreased in comparison to soil pH from other areas of RFAAP. Given the lack of historical evidence of spills in the area, and the laboratory results, there has been no migration of contaminants to soil, groundwater or surface water at SSA 80. Any stormwater conveyed by the ditch is covered by VPDES permit at Outfall 005. (See **Photo Number 2**).

Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that a reportable quantity of listed hazardous substances/wastes has been released to the environment from this facility.

3.3 SWMU 61: MOBILE WASTE OIL TANKS

Historical Information of Site

The Mobile Waste Oil Tanks listed as SWMU 61 were shop-built above ground tanks of approximately 100-gallon capacity that were mounted to trailers for the collection and storage of used oil from various vehicles and stationary equipment located throughout the RFAAP. When these tanks were full, the used oil was transferred to SWMU 76 Waste Oil Underground Storage Tank. Note that SWMU 76 was closed under the VDEQ oil/UST regulations and the UST closure report concluded that the UST no longer presented an environmental concern or threat. These mobile tanks are no longer present at the RFAAP, as they were closed out and scrapped in compliance with the recent Spill Prevention, Control, and Countermeasures (SPCC) regulations.

Spill / Cleanup Records of Site

The RCRA Facility Assessment prepared by A.T. Kearney indicated evidence of discolored soil beneath the mobile tanks by several operational buildings. However, the historical content of these tanks (used oil) is not a listed hazardous waste.

Historical Studies and Investigations Conducted at SWMU 61

RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 106.

Migration Pathways Analysis

- Soil, Groundwater and Surface Water: The mobile tanks were utilized for the collection and storage of used oil on an as needed basis. Incidental discharge of waste oil may have discolored the soil beneath the mobile tanks during active use, but there are no records of spills or cleanup actions were needed to be performed in the area of the mobile tanks. The tanks were closed out and scrapped in accordance with SPCC regulations upon deactivation. No migration pathways exist for soil, groundwater and surface water.

Basis for Removal from the RCRA Corrective Action Permit

SWMU 61 should be removed from the RCRA Corrective Action Permit because these tanks are no longer present at the facility. Additionally, there is no documentation or indication that a reportable quantity of listed hazardous substances/wastes has been released to the environment from these units.

ATTACHMENT 1
FIGURES

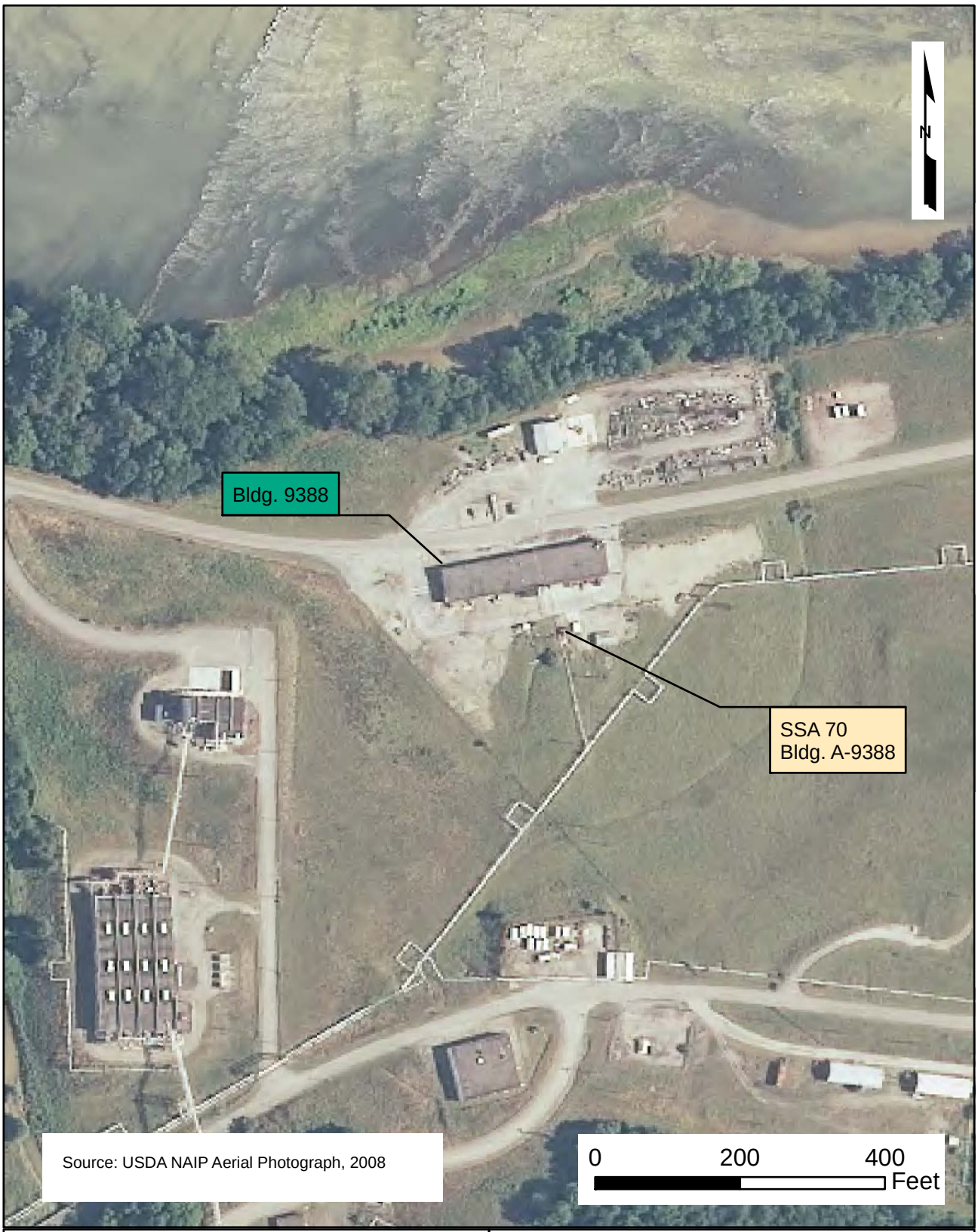

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Figure 1
SSA 70 - Oil Water Separator
Radford Army Ammunition Plant
Aug 2010

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Figure 2
SSA 80 - Drainage Ditch North of Bldg. 420-2
Radford Army Ammunition Plant
Aug 2010

ATTACHMENT 2
PHOTOGRAPHS

Photo 1. SSA 70 – Installation of 550-gallon oil water separator in 1999.


Photo 2. SSA 80 – C-line ditch. Bldg. 420-2 is located in the background.

ATTACHMENT 3
LABORATORY ANALYSIS RESULTS

SSA 70 (HEAVY EQUIPMENT MAINTENANCE SHOP
TRACTOR STEAM CLEANING AREA OIL-WATER SEPARATOR)
SOIL SAMPLING ANALYTICAL RESULTS

REIC

CHAIN OF CUSTODY RECORD NO. 62314

REI Consultants, Inc.
225 Industrial Park Rd.
P.O. Box 286, Beaver, WV 25813
Phone: 304-255-2500 or 800-999-0105
FAX: 304-255-2572

CLIENT: ALLIANT TECHSYSTEMS
ADDRESS: ROUTE 114 (P.O. BOX 1)
CITY/STATE/ZIP: RADFORD, VA 24141
BILL TO: ALLIANT TECH; ATTN: J. REDDER
CITY/STATE/ZIP: RADFORD, VA 24141

CONTACT PERSON: MIKE LEE
TELEPHONE/FAX: 639-8596; FAX-7214
SITE ID & STATE: 9388; RIVER GARAGE
PROJECT ID:
SAMPLER: M. A. LEE

SAMPLE LOG AND ANALYSIS REQUEST

TURNAROUND TIME REQUIREMENTS
REGULAR: ✓
*RUSH: ___ 5-Day ___ 3-Day ___ 2-Day ___ 1-Day
*Rush work needs prior Laboratory approval and will include surcharges

PRESERVATIVES
0 No Preservative
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide
6 Zinc Acetate
7 EDTA

PRESERVATIVE CODES — NOTE PRESERVATIVES → 0 0

SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING DATE / TIME	MATRIX	SAMPLE COMP / GRAB	ANALYSIS REQUESTED & METHOD: TPH-GC	BTEX	COMMENTS
9388 A	1 JAR	6/24/99 10:! Am	SOIL	GRAB			REFRIGERATED
9388 B	1 JAR	6/24/99 10:! Am	SOIL	GRAB			"
PILE	1 ZIP LOG BG.	6/24/99 10:! Am	SOIL	GRAB			"

Relinquished by: (Signature) — Date/Time: 6/25/99 1400 — Received by: (Signature)
Date/Time — Relinquished by: (Signature) — Date/Time — Received by: (Signature) — Date/Time: 6-25-99 2:00

Special Requests:
Sample Condition: Good? Y N
Temperature Upon Arrival: 4.0 °C

Shipment: Hand-Del: Courier: UPS: FedEx:
Shipment Date: FAX Results: Y N

REIConsultants, Inc.

PROFESSIONAL ENVIRONMENTAL CONSULTING SERVICES PERFORMED FOR:

ALLIANT HERCULES INC.
PO BOX 1
RADFORD VA 24141

REIC Job #	**L73192**
Project ID:	
Custody #:	**62314**
Site ID:	**9388 RIVER GARAGE**
Date Submitted:	**25-JUN-99**

REIConsultants, Inc.

L73192

ALLIANT HERCULES INC.

Client Sample ID: 9388 A
Sample Date: 24-JUN-99
REIC Sample ID: L73192-1
Matrix: Solid
Client Project ID:
Custody #: 62314

Parameter	Result	Units	Method	MQL	Analyzed	By
SEMIVOLATILE ORGANIC COMPOUNDS						
TPH	ND	mg/kg	8015B-DRO	4.0	30-JUN-99	JR
VOLATILE ORGANIC COMPOUNDS						
benzene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
toluene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
ethylbenzene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
xylene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
TPH	ND	mg/kg	8015B-GRO	5.0	30-JUN-99	KK
Percent Moisture	18	%	2540B	0.5	29-JUN-99	VS

REIConsultants, Inc.

L73192

ALLIANT HERCULES INC.

Client Sample ID: 9388 B
Sample Date: 24-JUN-99
REIC Sample ID: L73192-2
Matrix: Solid
Client Project ID:
Custody #: 62314

Parameter	Result	Units	Method	MQL	Analyzed	By
SEMIVOLATILE ORGANIC COMPOUNDS						
TPH	ND	mg/kg	8015B-DRO	4.0	30-JUN-99	JR
VOLATILE ORGANIC COMPOUNDS						
benzene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
toluene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
ethylbenzene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
xylene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
TPH	ND	mg/kg	8015B-GRO	5.0	30-JUN-99	KK
Percent Moisture	18	%	2540B	0.5	29-JUN-99	VS

REIConsultants, Inc.

L73192

ALLIANT HERCULES INC.

Client Sample ID: PILE
Sample Date: 24-JUN-99
REIC Sample ID: L73192-3
Matrix: Solid
Client Project ID:
Custody #: 62314

Parameter	Result	Units	Method	MQL	Analyzed	By
SEMIVOLATILE ORGANIC COMPOUNDS						
TPH	ND	mg/kg	8015B-DRO	4.0	30-JUN-99	JR
VOLATILE ORGANIC COMPOUNDS						
benzene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
toluene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
ethylbenzene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
xylene	ND	mg/kg	8021B	0.005	30-JUN-99	KK
TPH	ND	mg/kg	8015B-GRO	5.0	30-JUN-99	KK
Percent Moisture	18	%	2540B	0.5	29-JUN-99	VS

Abbreviations Key

ANA - Analysis Not Available
BTU - British Thermal Units
DRO - Diesel Range Organics
GPM - Gallons Per Minute
GRO - Gasoline Range Organics
KRO - Kerosene Range Organics
MDL - Method Detection Limit
MQL - Minimum Quantifying Level
NA - Not Applicable
ND - None Detected at MQL
NTU - Nephelometric Turbidity Units
ORO - Oil Range Organics
SU - Standard Units
TPH - Total Petroleum Hydrocarbons
TKN - Total Kjeldahl Nitrogen
TS - Total Solids
TSS - Total Suspended Solids
VSS - Volatile Suspended Solids

Date: 7-2-99 Approved: Janet M Satterfield
Organic Department Manager

Date: 7-2-99 Approved: Carl Smith
Vice-President

Appendix A - Quality Control Summary

Method	Surrogate	% Recovery
	L73192-1	
8015B-DRO	p-terphenyl-d14	66
8015B-GRO	2,5-dibromotoluene	128
8021B	1,1,1-trifluorotoluene	110
	L73192-2	
8015B-DRO	p-terphenyl-d14	53
8015B-GRO	2,5-dibromotoluene	114
8021B	1,1,1-trifluorotoluene	95
	L73192-3	
8015B-DRO	p-terphenyl-d14	51
8015B-GRO	2,5-dibromotoluene	124
8021B	1,1,1-trifluorotoluene	111

SSA 80 (DRAINAGE DITCH FOR C-LINE WASTEWATER TREATMENT AND PLANT RUNOFF) SOIL SAMPLING ANALYTICAL RESULTS

REI Consultants, Inc. Analytical Results

Date: *19-Apr-10*

CLIENT:	EEE CONSULTING	**WorkOrder:**	1004765 **Lab ID** 1004765-01A
Client Sample ID:	C-LINE-1	**DateReceived**	4/9/2010
Project:	10-751	**Collection Date:**	4/8/2010 10:15:00 AM
Site ID:	RFAAP, VA	**Matrix:**	SOIL

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
PH			**SW9045C**			Analyst: **DSD**	
pH	7.92	SU		NA	NA		04/16/10 11:05 AM

Key:	MCL	Maximum Contaminant Level	**Qualifiers:**	B	Analyte detected in the associated Method Blank
	MDL	Minimum Detection Limit		E	Estimated Value above quantitation range
	NA	Not Applicable		H	Holding times for preparation or analysis exceeded
	ND	Not Detected at the PQL or MDL		S	Spike/Surrogate Recovery exceeds REIC control limits
	PQL	Practical Quantitation Limit		*	Value exceeds MCL or Regulatory Limits
	TIC	Tentatively Identified Compound, Estimated Concentrati			

REI Consultants, Inc. Analytical Results

Date: *19-Apr-10*

CLIENT:	EEE CONSULTING	**WorkOrder:**	1004765 **Lab ID** 1004765-02A
Client Sample ID:	C-LINE-2	**DateReceived**	4/9/2010
Project:	10-751	**Collection Date:**	4/8/2010 10:15:00 AM
Site ID:	RFAAP, VA	**Matrix:**	SOIL

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
PH			**SW9045C**			Analyst: **DSD**	
pH	8.12	SU		NA	NA		04/16/10 11:05 AM

Key:
- MCL Maximum Contaminant Level
- MDL Minimum Detection Limit
- NA Not Applicable
- ND Not Detected at the PQL or MDL
- PQL Practical Quantitation Limit
- TIC Tentatively Identified Compound, Estimated Concentrati

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Estimated Value above quantitation range
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate Recovery exceeds REIC control limits
- * Value exceeds MCL or Regulatory Limits