

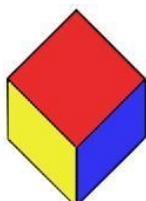
Guardian Environmental Services Company, Inc.

Elkton Farms Firehole Site

**2-Inch Tracer
Hazard Characterization Report
6 February 2008**



Team Members



**Reactivities
Management
Corporation**

USA Environmental, Inc.

Approval

John Fellingner

03/07/2008

John Fellingner
Senior Project Manager
Guardian Environmental Services Company, Inc

Date

EXECUTIVE SUMMARY

Guardian Environmental Services Company, Inc. (GESC) was tasked by U.S. Environmental Protection Agency, Region III (EPA) to conduct a Removal Action (RA) for munitions and explosives of concern (MEC) at the Elkton Farms Firehole Site. Phase I operations included traditional hand survey and clearing operations (mag and dig) in locations with low MEC anomaly density. Phase II operations involved mechanical excavation of MEC anomalies in high-density areas followed by hydro-aeration screening of the soils, to separate MEC from other site debris. The screened soils will remain on site.

GESC has provided Removal Support at the Site for Phase I and Phase II operations. Recently, seven exploratory line trenches were constructed across the Phase II high-density anomaly zone, south of the two known fireholes. The exploratory trenches found only surface (0 to 18 inches) contamination containing munitions debris (MD)/MEC and metallic anomalies. EPA conducted an evaluation of the exploratory trenches and confirmed that all metallic anomalies including potential MD/MEC were within the top 18 inches of the surface. The majority (over 98%) of MEC found to date at the Site are 2-inch tracer elements. The fill material of these tracer elements does not contain explosive materials, based upon research provided by USA Environmental personnel (GESC team subcontractor) to EPA. Historically tracer elements contained white phosphorous. GESC was directed by EPA to conduct additional reactivity tests on a representative number of already staged 2-inch tracer elements. Currently, there are over 15,000 2-inch tracer elements staged on Site.

GESC evaluated the 2-inch tracer elements to determine if they met the RCRA hazardous waste definitions for characteristic of ignitability (Waste Code D001), characteristic of corrosivity (Waste Code D002), characteristic of reactivity (Waste code D003), and toxicity characteristic (Waste Code D004) and to additionally determine if they were potentially capable of being initiated using methods recognized and approved by the U.S. Department of Transportation (DOT).

The 2-inch tracer elements were evaluated for water reactivity, toxic gas emissions, acid/alkaline gas emissions, and small-scale burns on December 14, 2007. Soil samples that were in contact with the 2-inch tracer elements were also sent for toxicity characteristic leachate procedure (TCLP) analysis. GESC team-subcontractor USA Environmental screened the 2-inch tracer elements recovered during Phase I and II operations to select 2-inch tracer elements potentially containing reactive materials, rather than empty 2-inch tracer elements. GESC and Reactives Management Corporation personnel conducted the Reactivity testing. The small-scale burn testing was recorded on videotape to facilitate future reviews.

At least seven separate runs were conducted for each specific test. A total of 72 2-inch tracer elements were evaluated in the small-scale burn testing. None of the 2-inch tracer elements tested in the small-scale burn test exhibited the characteristic of reactivity (CFR 261.23 (a) (6) through (a) (8)) or the characteristic of ignitability (CFR 261.21 (a) (2)).

A total of 36 2-inch tracer elements were evaluated for water reactivity, toxic gas emissions, and acid/alkaline gas emissions for the characteristic of reactivity (261.23 (a) (1) through (a) (5)). None of the 2-inch tracer elements tested for water reactivity, toxic gas emissions, and acid/alkaline gas emissions exhibited the characteristic of reactivity.

The TCLP analysis of the composite soil sample collected did not show any detection over Resource, Conservation, and Recovery Act (RCRA) regulatory limits, therefore the soil beneath the 2-inch tracer elements does not exhibit toxicity characteristic (CFR 261.24(a) and (b)). In addition, because the 2-inch tracer elements (and soils beneath them) are solids, they cannot exhibit the characteristic of corrosivity (CFR 261.22 (a) (1) and (a) (2)).

In summary, the 2-inch tracer elements tested did not exhibit any RCRA characteristics of hazardous waste (ignitability, corrosivity, reactivity, and toxicity). Based upon this testing/characterization, GESC has not proposed any modifications to site operations or the currently proposed revisions to Phase II Operations.

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1	Objectives	1
1.2	Format	1
2.0	Test Descriptions	2
2.1	Water Reactivity Test	2
2.2	Toxic Gas Emissions Test.....	2
2.3	Acid/Alkaline Gas Emissions Test	3
2.4	Small-scale Burn Test	3
2.5	TCLP Analysis.....	4
3.0	Test Results	4
3.1	Water Reactivity	4
3.2	Toxic Gas Emissions.....	4
3.3	Acid/Alkaline Gas Emissions	5
3.4	Small-scale Burns	5
3.5	TCLP Analysis.....	6
4.0	Discussion	6
5.0	Recommendations.....	7

Attachment 1 – TCLP Analytical Data Package

1.0 Introduction

Guardian Environmental Services Company, Inc. (GESC) was tasked by U.S. Environmental Protection Agency, Region III (EPA) to conduct a Removal Action (RA) for munitions and explosives of concern (MEC) at the Elkton Farms Firehole Site. Phase I operations included traditional hand survey and clearing operations (mag and dig) in locations with low MEC anomaly density. Phase II operations involved mechanical excavation of MEC anomalies in high-density areas followed by hydro-aeration screening of the soils, to separate MEC from other site debris. The screened soils will remain on site.

GESC has provided Removal Support at the Site for Phase I and Phase II operations. Recently, seven exploratory line trenches were constructed across the Phase II high-density anomaly zone, south of the two known fireholes. The exploratory trenches found only surface (0 to 18 inches) contamination containing munitions debris (MD)/MEC and metallic anomalies. EPA conducted an evaluation of the exploratory trenches and confirmed that all metallic anomalies including potential MD/MEC were within the top 18 inches of the surface. The majority (over 98%) of MEC found to date at the Site are 2-inch tracer elements. The fill material of these tracer elements does not contain explosive materials, based upon research provided by USA Environmental personnel (GESC team subcontractor) to EPA. GESC was directed by EPA to conduct additional reactivity tests on a representative number of already staged 2-inch tracer elements. Currently, there are over 15,000 2-inch tracer elements staged on Site.

GESC and team subcontractor Reactives Management Corporation (RMC) personnel evaluated the 2-inch tracer elements to determine if they met the Resource, Conservation and Recovery Act (RCRA) definitions for characteristics of hazardous waste (ignitability, corrosivity, reactivity, and toxicity), and to determine if they were potentially capable of being initiated using methods recognized and approved by the U.S. Department of Transportation (DOT). GESC and RMC personnel completed this evaluation on December 14, 2007. On December 24, 2007, Analytical Laboratory Services Inc. completed the toxicity characteristic leachate procedure (TCLP) analysis on the composite soil sample collected from soils exposed to the 2-inch tracer elements.

1.1 Objectives

The primary objective of the 2-inch tracer element testing was to determine if the 2-inch tracer elements recovered at the Site demonstrated the RCRA hazardous waste characteristic for reactivity. A RCRA hazardous waste is classified as reactive if:

- It can explode or violently react when exposed to water or under normal handling conditions or;
- It can create toxic fumes or gases when exposed to water or under normal handling conditions or;
- Generates toxic levels of sulfide or cyanide gas when exposed to a pH range of 2 through 12.5 or;
- It meets the criteria for classification as an explosive under DOT rules.

A secondary objective of the 2-inch tracer element testing was to determine if the 2-inch tracer elements recovered at the Site demonstrated the RCRA hazardous waste characteristic for ignitability, corrosivity, and toxicity.

1.2 Format

This Report incorporates elements from the Scope of Work (SOW), and supplements the *Work Plan, MEC Removal Action, Elkton Farm Firehole Site, Elkton, Maryland* (GES, 2007), including all Appendices. The following details the format of the 2-inch tracer element Hazard Characterization Report:

- Section 1.0:** **Introduction:** This section discusses the project authorization and defines the objectives of the 2-inch tracer element testing.
- Section 2.0:** **Test Descriptions:** This section describes the specific tests used to evaluate the 2-inch tracer elements
- Section 3.0:** **Test Results:** This section provides the results of the individual test conducted on the 2-inch tracer elements.
- Section 4.0:** **Discussion:** This section provides a discussion of the test results and related site information.
- Section 5.0** **Recommendations:** This Section provides GESC recommendations based upon the results of the testing.

2.0 Test Descriptions

The primary objective of the 2-inch tracer element testing was to determine if the 2-inch tracer elements recovered at the Site demonstrated the RCRA hazardous waste characteristic for reactivity (CFR 261.23 (a)(1) through (a)(8)). The primary objective was accomplished by conducting field tests for reactivity, in addition to using information obtained from alternate sources. The detailed, specific tests for RCRA reactivity characteristic and selected DOT explosive characterization are presented in following subsections.

The secondary objective of the 2-inch tracer element testing was accomplished through observation of the testing to determine if the 2-inch tracer elements demonstrated the characteristic of ignitability (CFR 261.21 (a) (2)) and through the analysis of a composite soil sample collected beneath 2-inch tracer elements found at the site to determine if the soils exposed to the 2-inch tracer elements exhibited the toxicity characteristic (CFR 261.24 (a) and (b)).

The 2-inch tracer elements utilized in the testing were selected by GESC team-subcontractor U.S.A. Environmental. The 2-inch tracer elements were obtained during Phase I and Phase II Operations. The selection of 2-inch tracer elements was biased toward those 2-inch tracer elements suspected of containing reactive materials. Visibly empty 2-inch tracer elements were not tested.

Seven separate runs were conducted for each test. GESC and team-subcontractor Reactives Management Corporation personnel conducted the testing. The initial run tested a single 2-inch tracer element. Subsequent runs were completed, using an increasing number of 2-inch tracer elements (e.g., 3, 5, 7, etc.) until a total of 36 2-inch tracer elements were evaluated for the individual tests.

2.1 Water Reactivity Test

The Water Reactivity Test was performed to determine if the 2-inch tracer elements violently reacted when exposed to water or under normal handling conditions (CFR 261.23 (a) (1) through (a) (3)). The 2-inch tracer elements were placed into a container of distilled water and observed. The water reactivity test was conducted simultaneously with the Toxic Gas Emissions Test.

2.2 Toxic Gas Emissions Test

The Toxic Gas Emissions Test was performed to determine if the 2-inch tracer elements generated toxic fumes or gasses upon exposure to water or during normal handling (CFR 261.23 (a)(4)). To test for toxic fumes or gas emissions during exposure to water, the 2-inch tracer elements were placed into a container of water as part of the Water Reactivity Test. A multi-RAE plus (with a hydrogen sulfide monotoxic sensor and a photo-ionization detector) and a toxi-RAE (equipped with a hydrogen cyanide monotoxic sensor) were used to monitor the vapor released from the container. This Toxic Gas Emissions Test was conducted simultaneously with the Water Reactivity Test. The water resulting from the Water Reactivity and Toxic Gas Emissions Tests was further used in the Acid/Alkaline Gas Emissions Test. Figure 1 shows the monitoring equipment in position over the test beaker.



Figure 1
Toxic Gas Emissions Test
(Initial set-up)

2.3 Acid/Alkaline Gas Emissions Test

The Acid/Alkaline Gas Emissions Test was conducted to determine if the 2-inch tracer elements generated toxic levels of hydrogen cyanide or hydrogen sulfide gas upon exposure to a pH range of 2 (acid) to 12.5 (alkaline) (CFR 261.23 (a)(5)). The pH of the water (including the 2-inch tracer elements) resulting from the Water Reactivity and Toxic Gas Emissions Tests was initially adjusted to 12.5 using a 30% sodium hydroxide solution. A 30% hydrochloric acid solution was slowly added to the water, lowering the pH to 2. A multi-RAE plus (with a hydrogen sulfide monotoxic sensor and a photo-ionization detector) and a toxi-RAE (equipped with a hydrogen cyanide monotoxic sensor) were used to monitor the vapor released from the container.

2.4 Small-scale Burn Test

The Small-scale Burn Test was performed to determine if unconfined samples, once ignited, continue burning or transit to an explosion or detonation (CFR 261.23 (a)(6) through (a)(8)). The 2-inch tracer elements were placed on a bed of woodchips and 50 milliliters of lighter fluid was added to the woodchips. An electric squib was placed into 10 cubic centimeters of black powder, and set on the woodchips. The electric squib was initiated, and the burn monitored.

In addition, this test was conducted to determine if the 2-inch tracer elements meet the requirements of 49 CFR 173.53 (a): Solid explosives which can be caused to deflagrate in contact with sparks or flame such as produced by safety fuse or an electric squib but cannot be detonated by a No. 8 blasting cap.

The small-scale burns tests were videotaped to provide for additional review. The videotape was reviewed in slow motion to determine if the 2-inch tracer elements could propagate the burn, and

therefore demonstrate the characteristic of ignitability (CFR 261.21 (a) (2)). Figure 2 shows the small-scale burn set-up, prior to ignition.



Figure 2
Small-Scale Burn Test Set-up

2.5 TCLP Analysis

TCLP analysis was performed on a five-point composite soil sample collected beneath 2-inch tracer elements located in grid E3A. The TCLP analysis was conducted to determine if components of the 2-inch tracer elements were leaching into the site soils, and to determine if the exposed soils demonstrated the toxicity characteristic (CFR 261.24 (a) and (b)). TCLP analysis was conducted using SW-846 methods following acid digestion.

3.0 Test Results

Seventy-two 2-inch tracer elements were subjected to the individual tests. During the testing, no 2-inch tracer elements demonstrated the characteristic for ignitability or reactivity. Specifics on the individual test results and observations are further described in the subsections below.

3.1 Water Reactivity

Seven individual test runs for water reactivity were conducted using a total of 36 2-inch tracer elements. There were no indications of water reactivity observed during the testing.

3.2 Toxic Gas Emissions

Seven individual test runs for toxic gas emissions were conducted simultaneously with the water reactivity testing, using a total of 36 2-inch tracer elements. There were no indications of toxic gas emissions observed or measured by the photoionization detector, hydrogen sulfide monotoxic sensor, or the hydrogen cyanide monotoxic sensor during the testing.

3.3 Acid/Alkaline Gas Emissions

Seven individual test runs for acid/alkaline gas emissions were conducted at the conclusion of the water reactivity and toxic gas emissions tests, using a total of 36 2-inch tracer elements. There were no indications of toxic gas emissions observed or measured by the photoionization detector, hydrogen sulfide monotoxic sensor, or the hydrogen cyanide monotoxic sensor during the testing.

3.4 Small-scale Burns

Seven individual test runs for small-scale burns were conducted using a total of 36 2-inch tracer elements. During the runs, no energetic events were observed. The small-scale burn tests were videotaped to provide for additional reviews. A slow motion review of the videotape did not detect any energetic events, and also failed to detect propagation of the burn through the 2-inch tracer elements. This indicates that the 2-inch tracer elements did not demonstrate the characteristic of ignitability. Figure 3 shows an initiation of a small-scale burn test.



Figure 3

Small-scale Burn Initiation

A decision was made in the field to conduct small-scale burn testing on the 36 2-inch tracer elements utilized during the water reactivity, toxic gas emissions, and acid/alkaline gas emissions testing, to determine if the 2-inch tracer elements were sensitized by the reactivity testing. The 36 2-inch tracer elements remaining at the conclusion of the water reactivity, toxic gas emissions,

and acid/alkaline gas emissions testing did not exhibit the characteristic of reactivity or ignitability during the small-scale burn test.

3.5 TCLP Analysis

A five-point composite soil sample was collected from grid E3A. Aliquots were collected from soils located directly beneath 2-inch tracer elements by USA Environmental personnel. The composite soil sample was sent to Analytical Laboratory Services, Inc. for TCLP analysis. SW-846 methods were used for the initial acid digestion and subsequent analysis of the sample. The composite soil sample did not exhibit any the toxicity characteristic. A copy of the analytical results is attached.

4.0 Discussion

Visual observation of a 2-inch tracer element that split in half, prior to any testing, indicated that the 2-inch tracer element had been subjected to a previous burn event. Observation of several intact 2-inch tracer elements yielded similar conclusions. Figure 4 shows the 2-inch tracer element that split in half, prior to testing.



Figure 4
Split 2-inch Tracer Element

None of the 2-inch tracer elements tested exhibited the characteristic of reactivity during the testing (CFR 261.23 (a) (1) through (a) (8)). Direct observation of the small-scale burn testing and slow motion review of the small-scale burn testing videotape did not show any exhibition for the characteristic of ignitability in the 2-inch tracer elements tested (CFR 261.21 (a) (2)). The composite soil sample collected beneath the 2-inch tracer elements did not demonstrate toxicity

characteristic (CFR 261.24 (a) and (b)). The 2-inch tracer elements and the composite soil sample did not demonstrate the characteristic of corrosivity ((CFR 261.22 (a) (1) and (a) (2)) since they are solids. Based upon this information, GESC feels that the 2-inch tracer elements do not appear to demonstrate any RCRA hazardous waste characteristic for ignitability, corrosivity, reactivity, or toxicity.

5.0 Recommendations

Since the 2-inch tracer elements do not appear to demonstrate the RCRA hazardous waste characteristic for ignitability, corrosivity, reactivity, or toxicity, GESC has not recommended any changes to the modifications currently planned for Phase II Operations.

Attachment 1
TCLP
Analytical Data Package



**ANALYTICAL
LABORATORY
SERVICES, INC.**

www.analyticallab.com

**NELAP Accredited
PA 22-293 NJ PA010**



34 Dogwood Lane - Middletown, PA 17057 Phone: 717-944-5541 Fax: 717-944-1430

Certificate of Analysis

Project Name: **27800**
Purchase Order: **E90488**

Workorder: **9715442**
Workorder ID: **27800**

Ms. Jen Mattern
Guardian Environmental Svc Inc
1280 Porter Road
Bear, DE 19701

December 24, 2007

Dear Ms. Mattern,

Enclosed are the analytical results for samples received by the laboratory on Thursday, December 13, 2007

ALSI is a National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAC.

If you have any questions regarding this certificate of analysis, please contact Denise Brooks (Project Coordinator) or Raymond J Martrano (Laboratory Manager) at (717) 944-5541.

Please visit us at www.analyticallab.com for a listing of ALSI's NELAC accreditations and Scope of Work, as well as other links to Water Quality documentation on the internet.

This laboratory report may not be reproduced, except in full, without the written approval of ALSI.

NOTE: ALSI has changed the report generation tool and while we have tried to retain the existing format, you will notice some changes in the laboratory report. Please feel free to contact ALSI in case you have any questions.

Analytical Laboratory Services, Inc.

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Raymond J. Martrano
Laboratory Manager



SAMPLE SUMMARY

Workorder: 9715442 27800

Discard Date: 01/05/2008

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
9715442001	27800-1	Solid	12/7/07 14:00	12/13/07 16:45	Customer

Workorder Comments:

Notes

- Samples collected by ALSI personnel are done so in accordance with the procedures set forth in the ALSI Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.

Standard Acronyms/Flags

J, B	Both flags indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference



ANALYTICAL RESULTS

Workorder: 9715442 27800

Lab ID: **9715442001**

Date Collected: 12/7/2007 14:00

Matrix: Solid

Sample ID: **27800-1**

Date Received: 12/13/2007 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr	RegLmt
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TCLP VOLATILE ORGANICS

Benzene	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
2-Butanone	ND		ug/L	200	SW846 8260B			12/20/07 23:17	ECR	A	
Carbon Tetrachloride	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
Chlorobenzene	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
Chloroform	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
1,2-Dichloroethane	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
1,1-Dichloroethene	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
Tetrachloroethene	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
Trichloroethene	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	
Vinyl Chloride	ND		ug/L	20.0	SW846 8260B			12/20/07 23:17	ECR	A	

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr	RegLmt
1,2-Dichloroethane-d4 (S)	77		%	62-133	SW846 8260B			12/20/07 23:17	ECR	A	
4-Bromofluorobenzene (S)	109		%	79-114	SW846 8260B			12/20/07 23:17	ECR	A	
Dibromofluoromethane (S)	83		%	78-116	SW846 8260B			12/20/07 23:17	ECR	A	
Toluene-d8 (S)	86		%	76-127	SW846 8260B			12/20/07 23:17	ECR	A	

TCLP METALS

Arsenic, Total	ND		mg/L	0.220	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	
Barium, Total	1.70		mg/L	0.560	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	
Cadmium, Total	ND		mg/L	0.110	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	
Chromium, Total	ND		mg/L	0.110	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	
Lead, Total	ND		mg/L	0.110	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	
Mercury, Total	ND		mg/L	0.002	SW846 7470A	12/17/07	CMD	12/17/07 14:34	CMD	A2	
Selenium, Total	ND		mg/L	0.22	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	
Silver, Total	ND		mg/L	0.110	SW846 6010B	12/17/07	MNP	12/17/07 17:07	JWK	A1	

TCLP SEMI-VOLATILES

mp-Cresol	ND		ug/L	160	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
o-Cresol	ND		ug/L	160	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
1,4-Dichlorobenzene	ND		ug/L	60	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
2,4-Dinitrotoluene	ND		ug/L	60	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Hexachlorobenzene	ND		ug/L	60	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Hexachlorobutadiene	ND		ug/L	60	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Hexachloroethane	ND		ug/L	60	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Nitrobenzene	ND		ug/L	60	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Pentachlorophenol	ND		ug/L	160	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Pyridine	ND		ug/L	160	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
2,4,5-Trichlorophenol	ND		ug/L	180	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
2,4,6-Trichlorophenol	ND		ug/L	160	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	

Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr	RegLmt
2,4,6-Tribromophenol (S)	97		%	41-125	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Phenol-d5 (S)	36		%	10-73	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Terphenyl-d14 (S)	84		%	52-129	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
Nitrobenzene-d5 (S)	83		%	40-110	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	



ANALYTICAL RESULTS

Workorder: 9715442 27800

Lab ID: **9715442001**

Date Collected: 12/7/2007 14:00

Matrix: Solid

Sample ID: **27800-1**

Date Received: 12/13/2007 16:45

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr	RegLmt
2-Fluorobiphenyl (S)	73		%	50-110	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	
2-Fluorophenol (S)	56		%	20-93	SW846 8270C	12/18/07	RSS	12/20/07 17:35	DHF	A4	

TCLP PESTICIDES

gamma-BHC	ND		ug/L	1.00	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Chlordane	ND		ug/L	20.0	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Endrin	ND		ug/L	1.00	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Heptachlor	ND		ug/L	1.00	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Heptachlor Epoxide	ND		ug/L	1.00	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Methoxychlor	ND		ug/L	1.00	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Toxaphene	ND		ug/L	40.0	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr	RegLmt
Decachlorobiphenyl (S)	71		%	30-150	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	
Tetrachloro-m-xylene (S)	59		%	30-150	SW846 8081A	12/18/07	KMR	12/21/07 04:06	KJH	A3	

TCLP HERBICIDES

2,4-D	ND		ug/L	4.0	SW846 8151A	12/19/07	CAC	12/20/07 20:28	KJH	A7	
2,4,5-TP	ND		ug/L	4.0	SW846 8151A	12/19/07	CAC	12/20/07 20:28	KJH	A7	
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared	By	Analyzed	By	Cntr	RegLmt
2,4-Dichlorophenylacetic acid (S)	91		%	58-154	SW846 8151A	12/19/07	CAC	12/20/07 20:28	KJH	A7	

TCLP LEACHATE

Extraction Fluid Used	1				SW846 1311			12/14/07 12:00	SDL	A	
Final pH	5.05		pH_Units		SW846 1311			12/14/07 12:00	SDL	A	
Preliminary pH after DI water	7.68		pH_Units		SW846 1311			12/14/07 12:00	SDL	A	
Preliminary pH after HCl	1.93		pH_Units		SW846 1311			12/14/07 12:00	SDL	A	

Sample Comments:

Raymond J. Martrano
Laboratory Manager



ANALYTICAL LABORATORY SERVICES, INC.

www.analyticallab.com

NELAP Accredited
PA 22-293 NJ PA010



34 Dogwood Lane - Middletown, PA 17057 Phone: 717-944-5541 Fax: 717-944-1430



★ 9 7 1 5 4 4 2 ★

SEND RE

CONTACT Guardian Env. Serv.

CONTACT Jen Matteson

PHONE NO. 800-834-1000

CHAIN-OF-CUSTODY RECORD

SAMPLE TYPE	
HZ Hazardous	SW Surface Water
SO Soil	WW Waste Water
DE Debris	GW Ground Water
SL Sludge	DW Drinking Water

Guardian Environmental Services, Inc.

1-800-345-4395

1280 Porter Road • Bear, DE 19701-1311

LABORATORY	Analytical Lab
CONTACT	Scott Brunk
PHONE NO.	(717) 944-5541

PROJECT NO.	27800	PROJECT NAME	EFF- #3
P.O. NO.	E90488	TURNAROUND TIME REQUIRED:	<input checked="" type="checkbox"/> 24 HR <input type="checkbox"/> 1 WEEK <input type="checkbox"/> NORMAL
QUOTE NO.			
LAB ID NO.	12-7-07 14:00	DATE SAMPLED	27800-1
TIME SAMPLED	00 12:14:17	TIME SAMPLED	
COMP	ENTERED	COMP	
GRAB	12/13/05	GRAB	
ANALYSIS NEEDED	TCLP (FILL)	ANALYSIS NEEDED	
SAMPLE TYPE (Use Reference)		SAMPLE TYPE	
NO. OF CONTAINERS	1	NO. OF CONTAINERS	
REMARKS		REMARKS	
COOLER TEMP:	3	COOLER TEMP:	
COOLER #:		COOLER #:	
THERM ID:	5102353	THERM ID:	
SHIP CARRIER:	FedEx	SHIP CARRIER:	
DHL		DHL	
OTHER:		OTHER:	
CUSTODY SEALS PRESENT?		CUSTODY SEALS PRESENT?	
(IF PRESENT) SEALS INTACT?		(IF PRESENT) SEALS INTACT?	
RECEIVED ON ICE?		RECEIVED ON ICE?	
COCLABELS COMPLETE/ACCURATE		COCLABELS COMPLETE/ACCURATE	
CONT IN GOOD COND?		CONT IN GOOD COND?	
CORRECT CONTAINERS?		CORRECT CONTAINERS?	
CORRECT SAMPLE VOLUMES?		CORRECT SAMPLE VOLUMES?	
CORRECT PRESERVATION?		CORRECT PRESERVATION?	
HEADSPACE/VOLATILES?		HEADSPACE/VOLATILES?	
TRACKING #:		TRACKING #:	
SAMPLED BY	James T. Gorbey	SAMPLED BY	
RELINQUISHED (SIGNATURE)	James T. Gorbey	RELINQUISHED (SIGNATURE)	
DATE / TIME	12-7-07	DATE / TIME	
RECEIVED BY (SIGNATURE)	Jen Matteson	RECEIVED BY (SIGNATURE)	
DATE / TIME	12-7-07 15:00	DATE / TIME	
RELINQUISHED (SIGNATURE)	Jen Matteson	RELINQUISHED (SIGNATURE)	
DATE / TIME	12/13/05	DATE / TIME	
SPECIAL NOTES OR HAZARDOUS		SPECIAL NOTES OR HAZARDOUS	
LAB LOT NO.		LAB LOT NO.	