

Site Assessment and Remedial Action Report

**Finley Meter Station
43601 S. Finley Road
Finley, Washington 99336
VCP No.: CE0362**

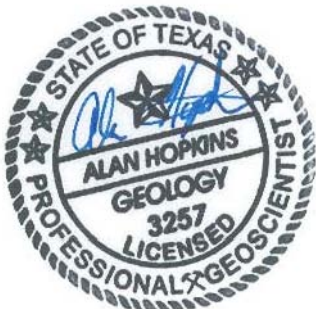
Prepared For:

**Northwest Pipeline GP
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Salt Lake City, UT 84108**

December 2012

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1.0 INTRODUCTION

On behalf of Northwest Pipeline GP (NWPL GP), Portnoy Environmental (PEI) has prepared this Site Assessment and Remedial Action Report (Report) for the Finley meter station (site). The site is located at 43601 S. Finley Road in Finley, Benton County, Washington within the area regulated by the Washington Department of Ecology's (Ecology's) Central Regional Office (CRO). The site is located within NWPL GP's Spokane operational district at the location shown on **Figure FCMS-1**. The site has been enrolled in Ecology's Voluntary Cleanup Program (VCP) with VCP No. CE0362 and site name Northwest Pipeline GP Finley MS. The Facility/Site Number is 322.

1.1. Program History

In 2005, NWPL GP began a Capacity Replacement Project (CRP) to replace the existing pipeline due to the DOT-mandated retirement of approximately 270 miles of a natural gas transmission line primarily along the I-5 corridor. As part of the CRP permitting, NWPL GP was required to obtain a Water Quality Certification, which included Permit Condition D11 that required CRP construction areas with potential soil contamination to be evaluated for compliance with Model Toxics Control Act (MTCA) cleanup standards prior to commencing construction. Assessment and, as necessary, remediation were conducted within the CRP construction work spaces where there was the possibility of impacts prior to commencing construction activities.

Following a December 2005 meeting with Ecology regarding Permit Condition D11, Ecology requested and NWPL GP provided a "commitment letter" dated January 19, 2006. The letter stated the company's commitment to assess and, if necessary, remediate its remaining facilities in Washington following CRP. A complete program history is documented in NWPL GP's May 15, 2010 *Update of Northwest Pipeline GP's Washington Cleanup Program Technical Memorandum*.

NWPL GP also assessed and remediated mercury impacts at its' facilities in the early 1990's, although such work was intended to address occupational worker exposures and may not have met MTCA requirements/standards.

1.2. Contaminant of Potential Concern

The primary contaminant of potential concern (COPC) at NWPL GP meter stations was identified as inorganic mercury. The primary source of potential mercury releases, if present, at NWPL GP meter stations was due to accidental spillage of inorganic mercury during historic maintenance and calibration of a certain type of differential pressure manometer (meters) that contained mercury. NWPL GP used such manometers to measure pressure on both sides of an orifice plate in order to calculate flow volumes through the pipeline, laterals, and taps that supply its customers. It is important to note that not all of the manometers historically used by NWPL GP contained mercury and that the installation of such manometers was phased out in the mid-to-late 1980's.

A secondary source of potential mercury releases, if present, at NWPL GP facilities was from "thermowells". Thermowells are test tube-shaped "wells" installed in the meter station piping into which thermometers were placed to measure gas temperatures. In some instances, mercury was also placed in

the well to improve the thermal conductance between the well and thermometer. The placement of mercury in thermowells varied regionally along the NWPL GP pipeline system. The thermowells did not contain large amounts of mercury, but there was the potential for some spillage when a thermowell was filled and/or when a thermometer was inserted and/or removed. The use of mercury in thermowells was phased out by 1993.

As requested by Ecology's Northwest and Southwest Regional Offices (NWRO and SWRO) during CRP, asbestos was added as a COPC at meter stations when historical records or field observations indicated the use of transite siding on the meter buildings. Similarly, the MTCA 5 metals plus copper, nickel and zinc were added as COPCs when sandblast media and/or paint flakes were observed. Since arsenic impacts were also found at a NWPL GP compressor station and the source of the arsenic is not understood; arsenic was added as a COPC at meter stations that had yet to be assessed. These COPCs and the triggers for collecting additional samples were incorporated into all assessment work following the knowledge of these issues in 2008.

Each COPC for a given meter station facility became a contaminant of concern (COC) if it was detected at a concentration that exceeded the potentially applicable MTCA cleanup level.

1.3. Conceptual Model

The conceptual model for the site is a localized release from point sources (meter or thermowell) to surface soils. Other potential sources could include sand blast grit released to surface soil or asbestos impacts associated with transite siding on the meter station building. Data collected during the initial CRP assessment and remedial work suggested that construction activities undertaken between the early '90's remedial action and the current program could have resulted in disturbance and potential spreading of impacted soils. In some isolated instances, clean fill may have been placed over impacted soils. Thus, if spreading and/or covering of impacted soils may have occurred, based upon interviews with NWPL GP operations personnel, the assessment activities were augmented with additional subsurface soil sampling. To limit the potential for "false negative" assessment results, assessment data sets were carefully reviewed for the purpose of evaluating whether adequate subsurface sampling was conducted to address potential spreading and/or covering of impacts.

1.4. Standard Operating Procedures

The assessment and remedial work documented in this Report used two Standard Operating Procedures (SOPs) developed in conjunction with, and approved by, Ecology's NWRO and SWRO. The *Standard Operating Procedure, Grid-Based Soil Sampling Protocol (Assessment SOP)* dated March 2005 documents the general method and practices used during assessment activities and allows for necessary modifications based upon unique site-specific considerations. The *Assessment SOP* specifies the use of an equilateral-triangle grid-based soil sampling program augmented by targeted surface and sub-surface samples at the limits of prior remedial excavations and/or such features as doors.

The *Standard Operating Procedure, Soil Remediation and Performance Sampling Protocol (Remediation SOP)* dated July 2005 similarly documents the methods and practices for remedial actions and performance sampling and also allows for necessary site-specific considerations/modifications. The



Assessment SOP and *Remediation SOP* have been successfully used to attain numerous no-further-action (NFA) Determinations at other NWPL GP meter stations.

1.5. Objectives

The objectives of the site assessment and remedial actions were to:

- Assess whether COPCs were present in the soil at concentrations exceeding potentially applicable cleanup levels;
- Characterize the concentrations of inorganic mercury at the terminal limits of the former remedial excavation;
- Characterize the horizontal and vertical extent of COCs;
- Complete a Terrestrial Ecological Evaluation; and
- Bring the site into compliance with the requirements of the Model Toxics Control Act (MTCA; RCW 70.105D) and its implementing regulation WAC 173-340 by completing remedial actions through excavation and off-site disposal to MTCA A cleanup levels.

2.0 CLEANUP LEVELS

The COC for the Finley meter station is inorganic mercury.

When evaluating applicable cleanup levels for the COCs at the site, three potential exposure pathways were considered based on the shallow depth of impacts:

- Direct human contact with impacted soils (human health);
- Protection of groundwater from impacted soil (human health); and
- Plants and wildlife exposures (ecological).

2.1. Human Health Exposure

Since the conceptual model for the site is for a relatively simple release, the MTCA Method A Soil Cleanup Levels (CUL) for Unrestricted Land Uses are considered fully protective of the potential human health exposure pathways of concern. The following CULs were obtained from Table 740-1:

- Mercury 2.0 mg/kg

2.2. Ecological Exposure

To evaluate ecological exposures, NWPL GP developed a program to perform terrestrial ecological evaluations (TEEs) for meter station facilities throughout Washington State. The Ecology-approved approach for the TEEs is documented in NWPL GP's *Terrestrial Ecological Evaluation Program Document for Northwest Pipeline GP's Meter Station Facilities throughout Washington State* dated May 2011. The results of the TEEs were documented in NWPL GP's *Terrestrial Ecological Evaluation Summary Report* (TEE Summary Report) dated November 2011. The TEE Summary Report is included on a CD as **Attachment A**. The approved methodologies for completing the TEEs were to:

1. Divide the state into representative areas (Northwest Washington, Southwest Washington/Columbia River, Central Washington, and Eastern Washington);
2. Establish site groupings and a representative facility within each representative area;
3. Collect TEE samples from each representative facility and analyze them for the appropriate terrestrial and ecological protectiveness through bioassay testing and bioaccumulation study; and
4. Establish appropriate TEE cleanup levels that are protective of all terrestrial and ecological receptors for each representative area.

The state divisions, site groupings, and representative facilities are summarized in the TEE Summary Report.



The site is located within the Central Washington Representative Area. As documented in the TEE Summary Report, the applicable cleanup levels that are protective of all potential terrestrial ecological receptors in the Central Washington Representative Area are as follows:

- Mercury – 2.8 mg/kg

2.3. Final Cleanup Levels

Based on the discussions above, the CUL that is fully protective of the potential human health or ecological exposure pathways at the site is as follows:

- Mercury 2.0 mg/kg MTCA Method A Cleanup Level for Unrestricted Land Uses

3.0 SITE ASSESSMENT

The following sections present the site description and history, site assessment methodologies, and site assessment results.

3.1. Site Description and History

The site is a natural gas meter station where gas is being regulated and metered to a local distribution company (LDC) or customer within a fenced enclosure. The site formerly contained one mercury-containing differential pressure manometer and one thermowell. The meter and thermowell were located above grade over a soil and gravel surface. The meter station is currently secured with a lock and is accessed off S. Finley Road in Finley, Washington.

The site underwent site assessment and remedial activities in 1990. The 1990 remedial action consisted of removal of two drums of gravel and soil from under and around the meter stand to a maximum depth of 24-inches. Verification sampling results of a composite sample indicated a residual concentration of 6.3 mg/kg mercury in the remediated area. The approximate area of the 1990 remedial excavation is depicted on **Figure FCMS-2**.

This site is on the Ecology Confirmed or Suspected Contaminated Sites (CSCS) list (Ecology Identifier 322). This site has undergone a Site Hazard Assessment (SHA) and has been ranked using the Washington Ranking Method (WARM) as a "3" with a status of "Confirmed".

3.2. Site Assessment Methodologies

In August and October 2008 the site underwent site assessment activities according to the *Assessment SOP* to assess the potential presence of mercury in soils. Due to the uncertainty regarding the previous remedial actions, soil samples were also collected at the extents of the former remedial boundaries. The surface soil samples were collected by hand methods by placing the soil directly into the laboratory-supplied jar. Subsurface samples were then collected by using a post-hole digger to excavate the soil to the desired sample depth and then collecting the soil sample with the sample jar.

Figure FCMS-2 illustrates the grid-based and targeted sampling points at the site (along with the mercury assessment results). The sampling approach at this facility encompassed the following:

1. Collection of 48 surface soil samples (40 surface samples and eight field duplicates);
2. Collection of 47 subsurface soil samples (46 subsurface samples and one field duplicate) from a depth of 12-36 inches throughout the facility;
3. Submittal of 86 soil samples for mercury analysis.

3.3. Site Assessment Results

There were no significant deviations from the *Assessment SOP* during site assessment activities. The assessment results for mercury are presented on **Figure FCMS-2** and **Table FCMS-1**. Laboratory analytical reports are included in **Attachment B**.

The site assessment resulted in complete vertical and horizontal delineation of the shallow soil impacts. The assessment satisfied the requirements of MTCA for evaluating and implementing appropriate remedial actions. No data gaps existed that would have prevented the implementation of an effective remedial action. Based upon the data collected, the only COC at the site that required remediation was inorganic mercury with the impacts to soil being limited to within 3 feet of the surface.

4.0 REMEDIAL ACTION

The following sections discuss the waste characterization and the remedial activities and results.

4.1. Waste Characterization and Handling

The soils characterized by the assessment activities as being impacted by inorganic mercury require appropriate handling and generally require disposal at a Resource Conservation and Recovery Act (RCRA) permitted Subtitle D Landfill.

The Toxicity Characteristic Leaching Procedure (TCLP; EPA Method 1311) was run on the highest detected mercury concentration (59 mg/kg for FCSS-RA1:24) with a TCLP result of 0.023 mg/L. Since this concentration is less than the 0.2 mg/L concentration necessary for these soils to be designated as a hazardous waste under RCRA, all excavated soils from the remedial activities were managed as non-hazardous waste and transported to and disposed of at Waste Management's Graham Road Subtitle D compliant landfill.

It should also be noted that NWPL GP classifies wastes using "in-situ" samples and not potentially diluted samples collected from excavated materials. Due to this practice, NWPL GP does not classify all wastes at a given facility under the most conservative waste handling codes, but instead segregates and manages wastes at each facility based on the extensive in-situ data.

4.2. Remedial Activities

The remedial activities for mercury-impacted soil were completed in September 2011. The remedial excavations were completed based upon the results of the site assessment sampling as shown in the corrective action plan presented on **Figure FCMS-3**.

During site setup, the initial limits of the excavation were marked along with proposed depths and waste characterization. Plastic sheeting was placed along the outer edges of the excavation to prevent impacted soil from coming into contact with un-impacted soil. Exclusion zones were established around high-pressure piping and valves to prevent potential contact with those items. The impacted soil was then excavated by hand using shovels and buckets to place the soil into a bobcat, which was then used to place the soil into a roll-off box for transportation to the landfill for disposal.

Once the initial limits of the remedial excavation were completed, performance samples were collected to determine compliance with the inorganic mercury CUL of 2.0 mg/kg and if any area(s) of the excavation did not comply with the CUL, the remedial excavation was expanded and re-sampled. **Figure FCMS-4** illustrates the limits of the remedial excavation at the site.

The locations of performance samples and the corresponding analytical results for the final limits of the remedial excavation are presented on **Figure FCMS-5**. The performance analytical results are summarized in **Table FCMS-2**. Laboratory analytical reports for the performance samples are included in **Attachment C**.



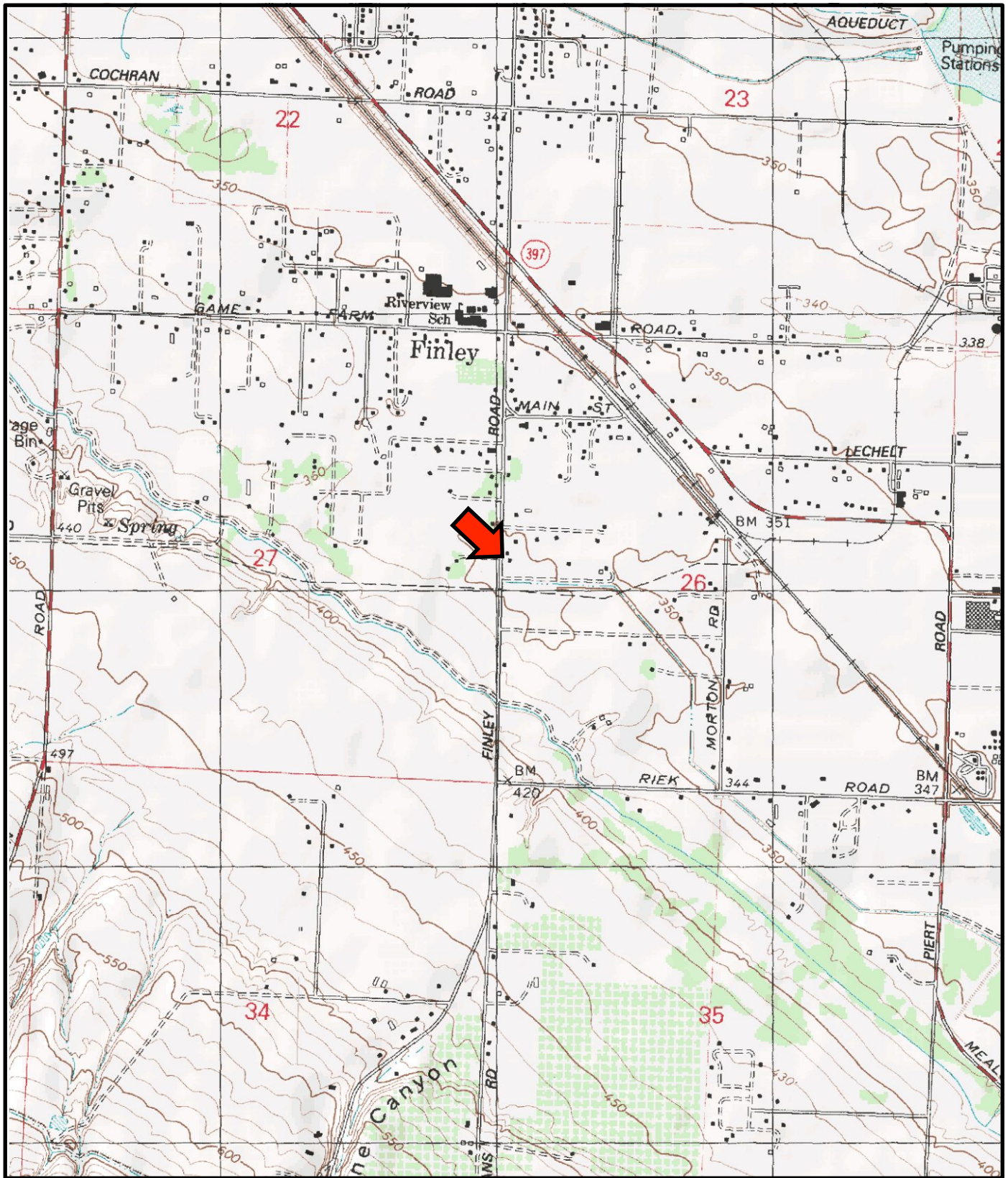
Once the performance samples indicated that the remedial activities were complete, the excavation was backfilled with clean backfill and the site was restored by placing a 5/8-minus gravel cover over the excavated areas. Representative photographs are included in **Attachment D**.

A total of 41.43 tons of non-hazardous soil was transported to Waste Management's Graham Road landfill in Spokane, Washington under Permit Number 105468WA for disposal. The applicable waste disposition information is included in **Attachment E**.



5.0 SITE STATUS AND CONCLUSION

Remedial activities at the Finley meter station have been completed. The site has been assessed and remediated in compliance with MTCA and the remedial action has resulted in compliance with MTCA for unrestricted land uses for the site. Accordingly, NWPL GP has determined that no further action is necessary at the site and requests that Ecology provides an opinion of no further action and removes the site from the CSCS list.



KEY: PLANT NORTH TRUE NORTH

SOURCE: USGS 7.5 Minute Quadrangle (Topographic)
PASCO, WA

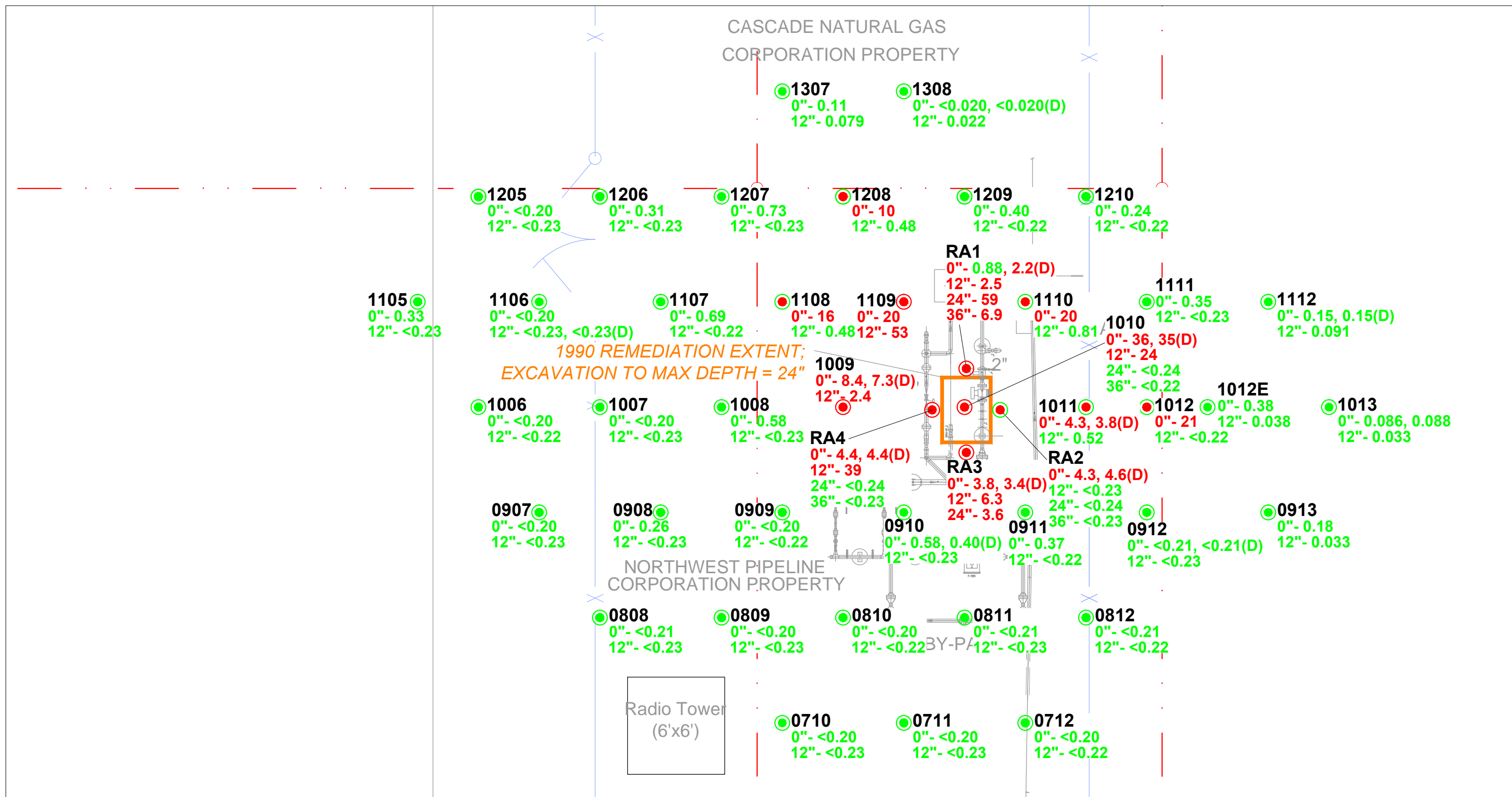
SCALE: APPROX. 1"=1600'

PROJECT	10179		
PREPARED FOR	NORTHWEST PIPELINE GP		
LOCATION	43601 S. FINLEY ROAD FINLEY, WASHINGTON 46.145355N, 119.03359W		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	AH	AH	2-2012

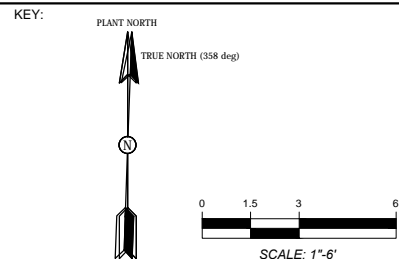


FIGURE FCMS-1
GENERAL VICINITY MAP
FINLEY METER STATION

CASCADE NATURAL GAS CORPORATION PROPERTY



REFERENCES: DWG NO. PM5-FIN-P0001-PLOT PLAN (AS-BUILT 10/29/96)



CLEANUP LEVEL
Hg - 2 mg/kg

- - SURFACE SAMPLE LOCATION
- - SUBSURFACE SAMPLE LOCATION
- ◐ - BOTH SURFACE AND SUBSURFACE SAMPLE LOCATION
- GREEN - Hg SAMPLE RESULT ≤ CLEANUP LEVEL
- RED - Hg SAMPLE RESULT > CLEANUP LEVEL

ASSESSMENT SAMPLE NAMING CONVENTION:

Unless otherwise noted, the prefix "FCSS-" was applied to each labeled grid node sample followed by a colon with the sample depth indicated in inches (e.g., FCSS-1010:12 represents a sample collected at grid node 1010 at a depth of 12 inches below grade).

Field duplicate sample results are denoted with a '(D)'.

PROJECT	10179		
PREPARED FOR	NORTHWEST PIPELINE GP WILLIAMS GAS PIPELINE		
LOCATION	43601 S. FINLEY ROAD FINLEY, WASHINGTON 99336		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	TLJ	WAH	03-31-2009

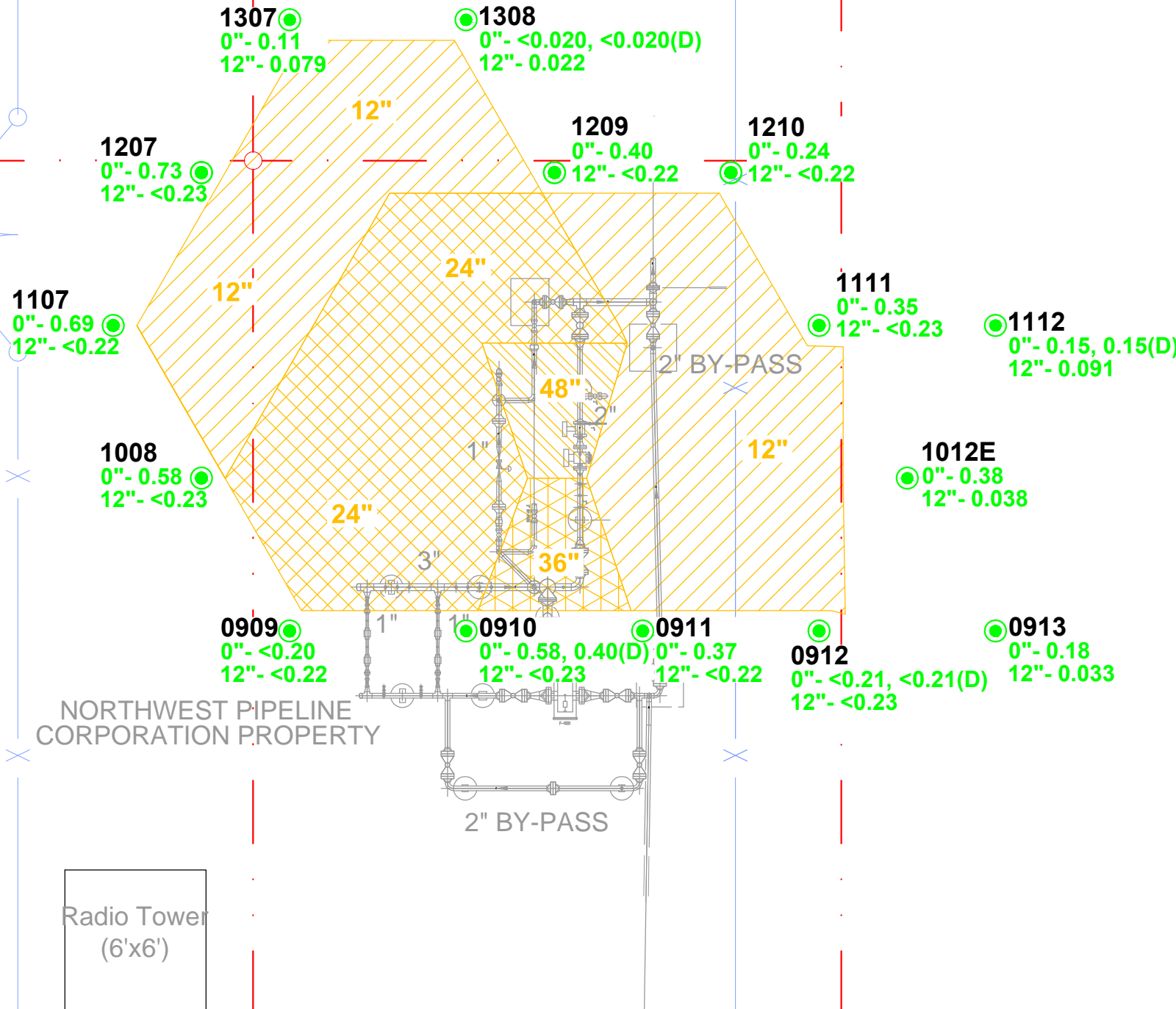


FIGURE FCMS-2
ASSESSMENT RESULTS
FINLEY METER STATION

CASCADE NATURAL GAS CORPORATION PROPERTY

EXCAVATION DEPTH LEGEND (AS APPLICABLE)

	- 12" EXCAVATION DEPTH
	- 24" EXCAVATION DEPTH
	- 36" EXCAVATION DEPTH
	- 48" EXCAVATION DEPTH



REFERENCES: DWG NO. PM5-FIN-P0001-PLOT PLAN (AS-BUILT 10/29/96)

KEY:

PLANT NORTH
TRUE NORTH (358 deg)

● - SURFACE SAMPLE LOCATION
○ - SUBSURFACE SAMPLE LOCATION
● - BOTH SURFACE AND SUBSURFACE SAMPLE LOCATION
GREEN - Hg SAMPLE RESULT DEFINING PERIMETER ≤ CLEANUP LEVEL
□ - PLANNED EXTENT OF REMEDIAL ACTION (DEPTH NOTED)

CLEANUP LEVEL
Hg - 2 mg/kg

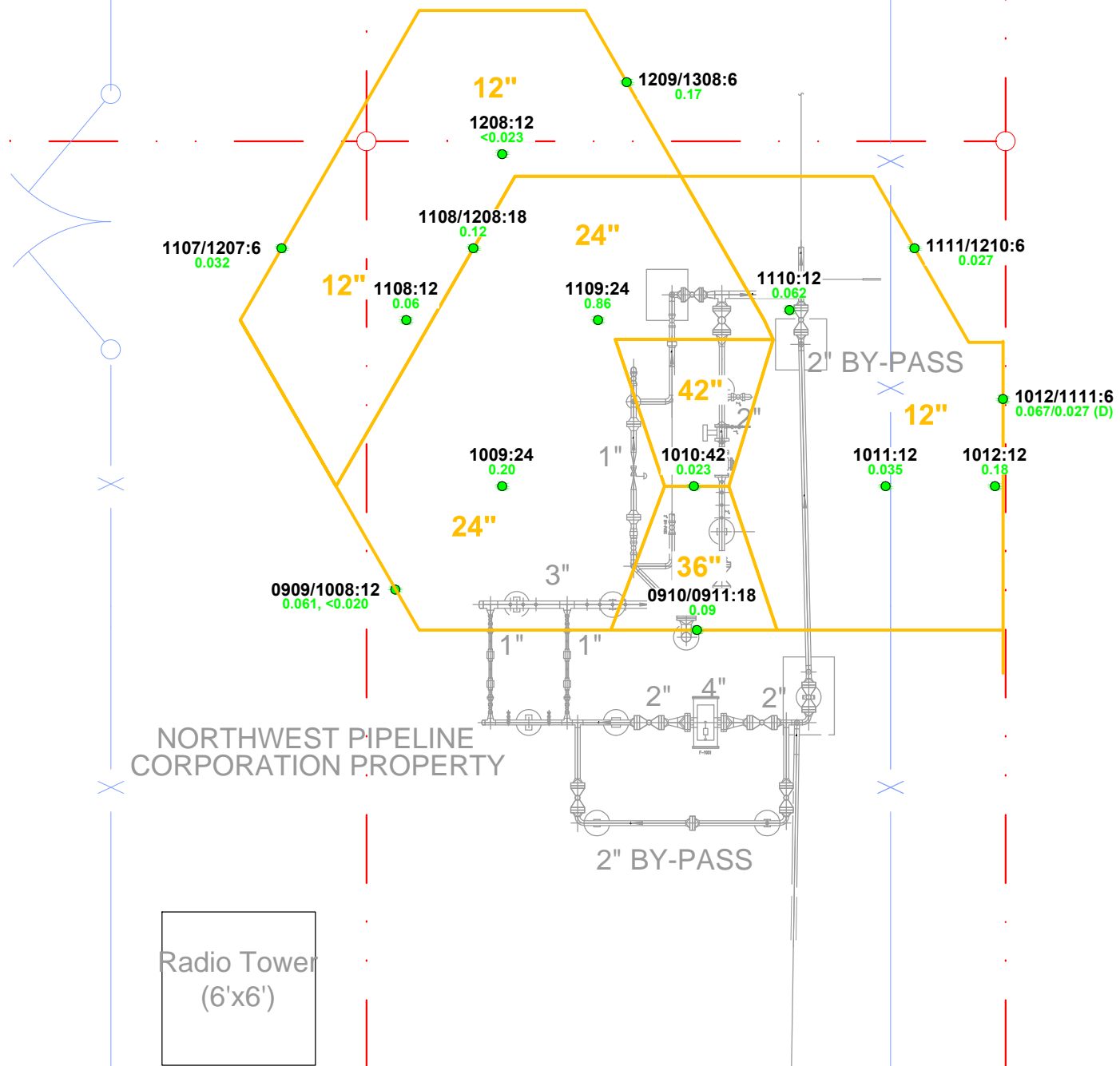
SCALE: 1"=6'

PERFORMANCE SAMPLE NAMING CONVENTION:
Performance sample IDs will have the prefix "FC-" AND a suffix of a colon with the sample depth indicated in inches (e.g., FC-0910/1009:12).
Field duplicate samples will be denoted with the suffix ".5" after the depth in inches (e.g., FC-1011:12.5 would be a duplicate of the bottom of excavation sample collected at grid node 1011 at a depth of 12 inches).

PROJECT	10179
PREPARED FOR	NORTHWEST PIPELINE GP WILLIAMS GAS PIPELINE
LOCATION	43601 S. FINLEY ROAD FINLEY, WASHINGTON 99336
SHEET	DRAWN BY 1 of 1 TLJ
	REVIEWED BY WAH
	DATE 02-01-2010

FIGURE FCMS-3
CORRECTIVE ACTION PLAN
FINLEY METER STATION

CASCADE NATURAL GAS CORPORATION PROPERTY

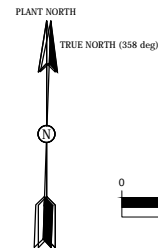


NORTHWEST PIPELINE CORPORATION PROPERTY

Radio Tower
(6'x6')

REFERENCES: DWG NO. PM5-FIN-P0001-PLOT PLAN (AS-BUILT 10/29/96)

KEY:



- - PERFORMANCE SAMPLE LOCATION
- GREEN - Hg SAMPLE RESULT ≤ CLEANUP LEVEL
- ▭ - INITIAL REMEDIAL EXCAVATION EXTENT (DEPTH NOTED)

CLEANUP LEVEL
Hg - 2 mg/kg

PERFORMANCE SAMPLE NAMING CONVENTION:

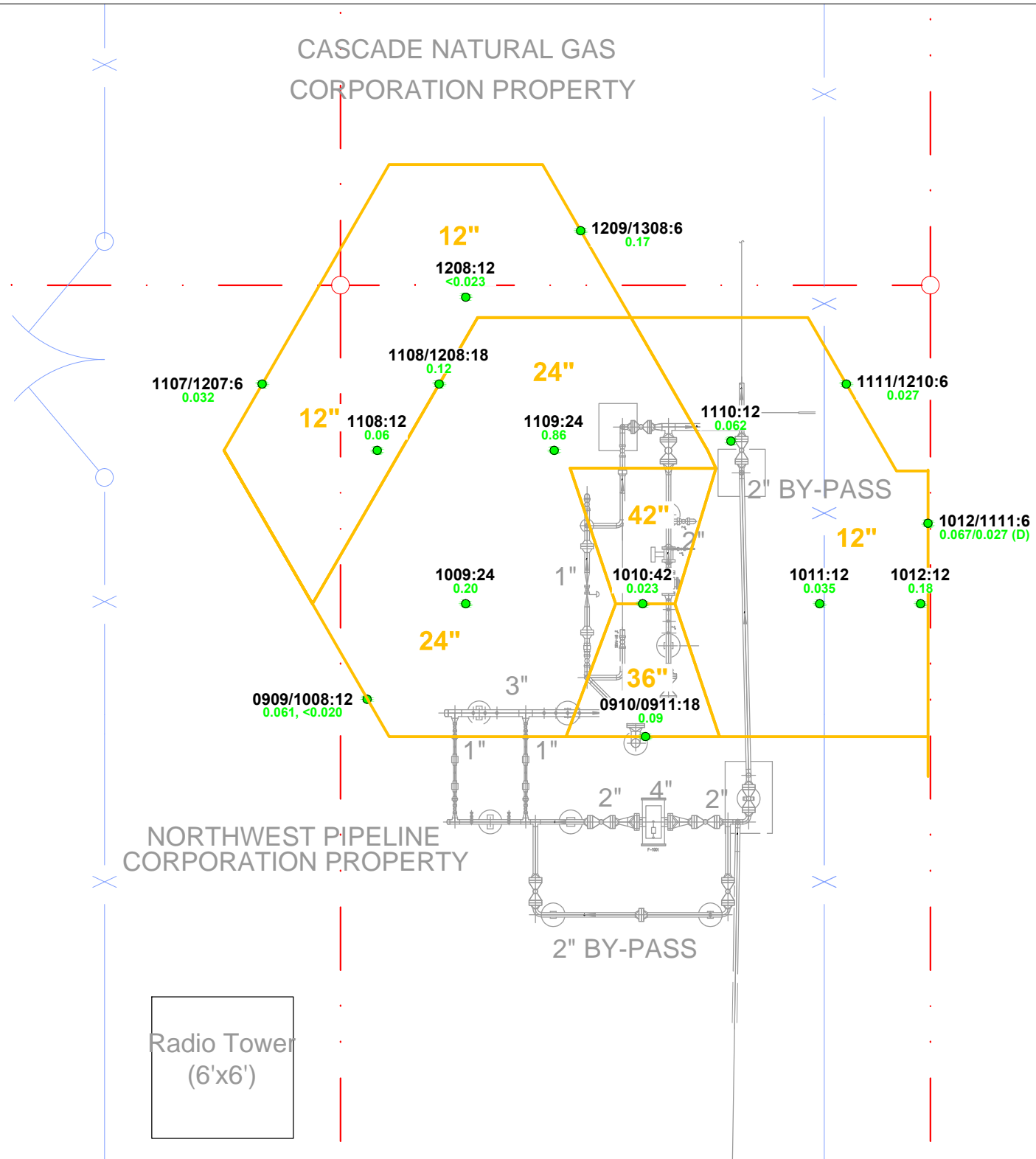
Performance sample IDs have the prefix "FC-" AND a suffix of a colon with the sample depth indicated in inches (e.g., FC-0910/1009:12).
Field duplicate samples are denoted with a "(D)".

PROJECT	10179		
PREPARED FOR	NORTHWEST PIPELINE GP WILLIAMS GAS PIPELINE		
LOCATION	43601 S. FINLEY ROAD FINLEY, WASHINGTON 99336		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	TLJ	WAH	02-01-2010



FIGURE FCMS-4
INITIAL LIMITS OF REMEDIAL EXCAVATION
FINLEY METER STATION

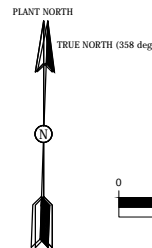
CASCADE NATURAL GAS CORPORATION PROPERTY



Radio Tower
(6'x6')

REFERENCES: DWG NO. PM5-FIN-P0001-PLOT PLAN (AS-BUILT 10/29/96)

KEY:



- - PERFORMANCE SAMPLE LOCATION
- GREEN - Hg SAMPLE RESULT ≤ CLEANUP LEVEL
- ▭ - FINAL REMEDIAL EXCAVATION EXTENT (DEPTH NOTED)

CLEANUP LEVEL
Hg - 2 mg/kg

PERFORMANCE SAMPLE NAMING CONVENTION:

Performance sample IDs have the prefix "FC-" AND a suffix of a colon with the sample depth indicated in inches (e.g., FC-0910/1009:12).
Field duplicate samples are denoted with

PROJECT	10179		
PREPARED FOR	NORTHWEST PIPELINE GP WILLIAMS GAS PIPELINE		
LOCATION	43601 S. FINLEY ROAD FINLEY, WASHINGTON 99336		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	TLJ	WAH	02-01-2010



FIGURE FCMS-5
FINAL LIMITS OF REMEDIAL EXCAVATION
FINLEY METER STATION

Table FCMS-1
Site Assessment Analytical Results - Mercury
Finley Meter Station
VCP Project No.: CE0362

Sample Designation	Depth (inches)	Date Collected	Sample Type			Total Mercury Concentration (mg/kg)
			Surface	Subsurface	Duplicate	
FCSS-0710:0	0	8/4/08	X			<0.2
FCSS-0710:12	12	8/4/08		X		<0.23
FCSS-0711:0	0	8/4/08	X			<0.2
FCSS-0711:12	12	8/4/08		X		<0.23
FCSS-0712:0	0	8/4/08	X			<0.2
FCSS-0712:12	12	8/4/08		X		<0.22
FCSS-0808:0	0	8/4/08	X			<0.21
FCSS-0808:12	12	8/4/08		X		<0.23
FCSS-0809:0	0	8/4/08	X			<0.2
FCSS-0809:12	12	8/4/08		X		<0.23
FCSS-0810:0	0	8/4/08	X			<0.2
FCSS-0810:12	12	8/4/08		X		<0.22
FCSS-0811:0	0	8/4/08	X			<0.21
FCSS-0811:12	12	8/4/08		X		<0.23
FCSS-0812:0	0	8/4/08	X			<0.21
FCSS-0812:12	12	8/4/08		X		<0.22
FCSS-0907:0	0	8/4/08	X			<0.2
FCSS-0907:12	12	8/4/08		X		<0.23
FCSS-0908:0	0	8/4/08	X			0.26
FCSS-0908:12	12	8/4/08		X		<0.23
FCSS-0909:0	0	8/4/08	X			<0.2
FCSS-0909:12	12	8/4/08		X		<0.22
FCSS-0910:0	0	8/4/08	X			0.58
FCSS-0910:0.5	0	8/4/08	X		X	0.40
FCSS-0910:12	12	8/4/08		X		<0.23
FCSS-0911:0	0	8/4/08	X			0.37
FCSS-0911:12	12	8/4/08		X		<0.22
FCSS-0912:0	0	10/29/08	X			<0.21
FCSS-0912:0.5	0	10/29/08	X		X	<0.21
FCSS-0912:12	12	10/29/08		X		<0.23
FCSS-0913:0	0	3/6/09	X			0.18
FCSS-0913:12	12	3/6/09		X		0.033
FCSS-1006:0	0	8/4/08	X			<0.2
FCSS-1006:12	12	8/4/08		X		<0.22
MTCA Method A Soil Cleanup Level for Unrestricted Land Uses						2.0

BOLD and shaded gray indicates sample result is above the selected cleanup level

".5" denotes field duplicate sample.

Table FCMS-1 (cont.)
Site Assessment Analytical Results - Mercury
Finley Meter Station
VCP Project No.: CE0362

Sample Designation	Depth (inches)	Date Collected	Sample Type			Total Mercury Concentration (mg/kg)
			Surface	Subsurface	Duplicate	
FCSS-1007:0	0	8/4/08	X			<0.2
FCSS-1007:12	12	8/4/08		X		<0.23
FCSS-1008:0	0	8/4/08	X			0.58
FCSS-1008:12	12	8/4/08		X		<0.23
FCSS-1009:0	0	8/4/08	X			8.4
FCSS-1009:0.3	0	8/4/08	X			7.3
FCSS-1009:12	12	8/4/08		X		2.4
FCSS-1010:0	0	8/4/08	X			36
FCSS-1010:0.24	0	8/4/08	X			<0.24
FCSS-1010:0.5	0	8/4/08	X		X	35
FCSS-1010:12	12	8/4/08		X		24
FCSS-1010:36	36	8/4/08		X		<0.22
FCSS-1011:0	0	8/4/08	X			4.3
FCSS-1011:0.5	0	8/4/08	X		X	3.8
FCSS-1011:12	12	8/4/08		X		0.52
FCSS-1012:0	0	10/29/08	X			21
FCSS-1012:12	12	10/29/08		X		<0.22
FCSS-1012E:0	0	3/6/09	X			0.38
FCSS-1012E:12	12	3/6/09		X		0.038
FCSS-1013:0	0	3/6/09	X			0.086
FCSS-1013:0.5	0	3/6/09	X		X	0.088
FCSS-1013:12	12	3/6/09		X		0.033
FCSS-1105:0	0	8/4/08	X			0.33
FCSS-1105:12	12	8/4/08		X		<0.23
FCSS-1106:0	0	8/4/08	X			<0.2
FCSS-1106:12	12	8/4/08		X		<0.23
FCSS-1106:12.5	12	8/4/08		X	X	<0.23
FCSS-1107:0	0	8/4/08	X			0.69
FCSS-1107:12	12	8/4/08		X		<0.22
FCSS-1108:0	0	8/4/08	X			16
FCSS-1108:12	12	8/4/08		X		0.48
FCSS-1109:0	0	8/4/08	X			20
FCSS-1109:12	12	8/4/08		X		53
FCSS-1110:0	0	8/4/08	X			20
MTCA Method A Soil Cleanup Level for Unrestricted Land Uses						2.0

BOLD and shaded gray indicates sample result is above the selected cleanup level

".5" denotes field duplicate sample.

Table FCMS-1 (cont.)
Site Assessment Analytical Results - Mercury
Finley Meter Station
VCP Project No.: CE0362

Sample Designation	Depth (inches)	Date Collected	Sample Type			Total Mercury Concentration (mg/kg)
			Surface	Subsurface	Duplicate	
FCSS-1110:12	12	8/4/08		X		0.81
FCSS-1111:0	0	10/29/08	X			0.35
FCSS-1111:12	12	10/29/08		X		<0.23
FCSS-1112:0	0	3/6/09	X			0.15
FCSS-1112:0.5	0	3/6/09	X		X	0.15
FCSS-1112:12	12	3/6/09		X		0.091
FCSS-1205:0	0	8/4/08	X			<0.2
FCSS-1205:12	12	8/4/08		X		<0.23
FCSS-1206:0	0	8/4/08	X			0.31
FCSS-1206:12	12	8/4/08		X		<0.23
FCSS-1207:0	0	8/4/08	X			0.73
FCSS-1207:12	12	8/4/08		X		<0.23
FCSS-1208:0	0	8/4/08	X			10
FCSS-1208:12	12	8/4/08		X		0.48
FCSS-1209:0	0	8/4/08	X			0.4
FCSS-1209:12	12	8/4/08		X		<0.22
FCSS-1210:0	0	8/4/08	X			0.24
FCSS-1210:12	12	8/4/08		X		<0.22
FCSS-1307:0	0	3/6/09	X			0.11
FCSS-1307:12	12	3/6/09		X		0.079
FCSS-1308:0	0	3/6/09	X			<0.02
FCSS-1308:0.5	0	3/6/09	X		X	<0.02
FCSS-1308:12	12	3/6/09		X		0.022
FCSS-RA1:0	0	8/4/08	X			0.88
FCSS-RA1:0.5	0	8/4/08	X		X	2.2
FCSS-RA1:12	12	8/4/08		X		2.5
FCSS-RA1:24	24	8/4/08		X		0
FCSS-RA1:36	36	8/4/08		X		59
FCSS-RA1:36	36	8/4/08		X		6.9
FCSS-RA2:0	0	8/4/08	X			4.3
FCSS-RA2:0.5	0	8/4/08	X		X	4.6
FCSS-RA2:12	12	8/4/08		X		<0.23
FCSS-RA2:24	24	8/4/08		X		<0.24
FCSS-RA2:36	36	8/4/08		X		<0.23
MTCA Method A Soil Cleanup Level for Unrestricted Land Uses						2.0

BOLD and shaded gray indicates sample result is above the selected cleanup level

".5" denotes field duplicate sample.

Table FCMS-1 (cont.)
Site Assessment Analytical Results - Mercury
Finley Meter Station
VCP Project No.: CE0362

Sample Designation	Depth (inches)	Date Collected	Sample Type			Total Mercury Concentration (mg/kg)
			Surface	Subsurface	Duplicate	
FCSS-RA3:0	0	8/4/08	X			3.8
FCSS-RA3:0.5	0	8/4/08	X		X	3.4
FCSS-RA3:12	12	8/4/08		X		6.3
FCSS-RA3:24	24	8/4/08		X		3.6
FCSS-RA4:0	0	8/4/08	X			4.4
FCSS-RA4:0.5	0	8/4/08	X		X	4.4
FCSS-RA4:24	24	8/4/08		X		<0.24
FCSS-RA4:36	36	8/4/08		X		<0.23
FCSS-RA40:12	12	8/4/08		X		39
MTCNA Method A Soil Cleanup Level for Unrestricted Land Uses						2.0

BOLD and shaded gray indicates sample result is above the selected cleanup level
".5" denotes field duplicate sample.

Table FCMS-2
Performance Sample Analytical Results - Mercury
Finley Meter Station
VCP Project No.: CE0362

Sample Designation	Depth (inches)	Date Collected	Sample Type			Final Performance Sample	Total Mercury Concentration (mg/kg)
			Sidewall	Bottom	Duplicate		
FC-0909/1008:12	12	9/9/11	X			X	0.061
FC-0909/1008:12.5	12	9/9/11	X		X	X	<0.020
FC-0910/0911:18	18	9/9/11	X			X	0.09
FC-1009:24	24	9/9/11		X		X	0.20
FC-1010:42	42	9/9/11		X		X	<0.023
FC-1011:12	12	9/9/11		X		X	0.035
FC-1012/1111:6	:6	9/9/11	X			X	0.067
FC-1012/1111:6.5	:6	9/9/11	X		X	X	0.027
FC-1012:12	12	9/9/11		X		X	0.18
FC-1107/1207:6	:6	9/9/11	X			X	0.032
FC-1108/1208:18	18	9/9/11	X			X	0.12
FC-1108:12	12	9/9/11		X		X	0.06
FC-1109:24	24	9/9/11		X		X	0.86
FC-1110:12	12	9/9/11		X		X	0.062
FC-1111/1210:6	:6	9/9/11	X			X	0.027
FC-1208:12	12	9/9/11		X		X	<0.023
FC-1209/1308:6	:6	9/9/11	X			X	0.17
MTCA Method A Soil Cleanup Level for Unrestricted Land Uses							2

Note: ".5" denotes field duplicate sample.

ATTACHMENT A

TERRESTRIAL ECOLOGICAL EVALUATION SUMMARY REPORT



Terrestrial Ecological Evaluation Summary Report

Northwest Pipeline GP Meter Station Facilities Throughout Washington State

Prepared For:

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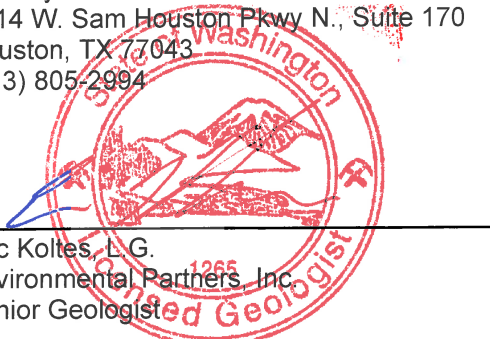
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Figure 1 – TEE Test Sites and Representative Area

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Table 1 – TEE Bioassay and Bioaccumulation Test Results Summary

Table 2 – TEE Cleanup Level Summary

ATTACHMENTS:

Attachment A – Terrestrial Ecological Evaluation Program, May 2011

Attachment B – Washington State Department of Ecology, Conditional Approval Letter, May 13, 2011

Attachment C – Laboratory Analytical Reports

Attachment D – Nautilus Environmental, Soil Toxicity Evaluation Report

Attachment E – TEE Cleanup Level Calculations

1.0 INTRODUCTION

Environmental Partners, Inc. (EPI) has prepared this Terrestrial Ecological Evaluation Summary Report to document the activities performed and results of the Terrestrial Ecological Evaluations (TEEs) conducted for Northwest Pipeline GP (NWPL GP) meter station facilities located throughout Washington State.

NWPL GP prepared a *Terrestrial Ecological Evaluation Program* document dated April 2011, which was submitted to Ecology on April 15, 2011.

On May 13, 2011, The Washington State Department of Ecology (Ecology) submitted a *Transmittal of Ecology Approval and Comment of the revised Terrestrial Ecological Evaluation Program, Northwest Pipeline GP Meter Station Facilities throughout Washington State, April 2011, prepared by Williams Gas Pipeline; Environmental Partners, Inc; and Portnoy Environmental* to NWPL GP, conditionally approving the document. Subsequent to receipt of the conditional approval letter, EPI incorporated the single comment provided by Ecology into the May 2011 *Terrestrial Ecological Evaluation Program* document (TEE Program Document). The revised TEE Program Document is included in Attachment A; the conditional approval letter is presented as Attachment B.

1.1 Background

NWPL GP is evaluating the environmental conditions at over 70 meter station facilities throughout Washington State, which have soil impacted with inorganic mercury and/or arsenic, and which have similar site conditions (*i.e.*, uncapped commercial/industrial type facilities, in rural locations, identical site usage, and the same contaminants). The meter station facilities are where gas is being regulated and metered from the main supply pipelines to local distribution companies (LDCs) or wholesale customers.

Based on the similarities of site conditions and COCs, NWPL GP has created a Model TEE approach based on the Site-Specific TEE

2.0 OBJECTIVES

The general objectives of the Model TEE study for NWPL GP meter station facilities were to evaluate the initial soil cleanup levels for inorganic mercury and arsenic of 2 and 20 mg/kg, respectively, for protectiveness of potential ecological receptors.

The specific objectives of the Model TEE were as follows:

- Divide the state into representative areas;
- Establish site groupings and a representative facility within each representative area;
- Collect TEE samples from each representative facility and analyze for appropriate terrestrial and ecological protectiveness through bioassay testing and bioaccumulation study; and

- Establish appropriate TEE cleanup levels that are protective of all terrestrial and ecological receptors for each representative area.

3.0 METHODOLOGY

The methods utilized for conducting the TEEs are described in the following sections and in the TEE Program Document.

3.1 Modified Model TEE based upon Site-Specific TEE

The meter station facilities did not qualify for primary TEE exclusions or for the Simplified TEE process provided in MTCA due to the uncapped and often rural nature of the facilities, and the generally surficial nature of the COCs. As such, a modified model Site-specific TEE process was implemented. The modified model Site-specific TEE is composed of several components. These components include problem formulation and selection and implementation of appropriate terrestrial ecological evaluation methods.

3.1.1 Problem Formulation

A problem formulation was conducted as a part of the TEE in accordance with WAC 173-340-7493(2). Problem formulation includes identification of the chemicals of ecological concern, potential exposure pathways, potential terrestrial ecological receptors, and a toxicological assessment. The elements of the TEE problem formulation are detailed in the TEE Program Document and are summarized as follows:

- The identified chemicals of ecological concern are the COCs for the meter station facilities, inorganic mercury and arsenic.
- The primary exposure pathway for inorganic mercury and arsenic in soil at the NWPL GP meter stations occurs via direct contact.
- Contact with contaminated soil can directly impact vegetation and soil biota.
- The secondary exposure pathway is ingestion of affected vegetation and soil biota containing bioaccumulated COCs at significant levels by ground-feeding birds and mammals.

3.1.2 Site-Specific TEE Method Selection

3.1.2.1 Mercury

Soil containing inorganic mercury at the meter stations has been characterized to the MTCA Method A Soil Cleanup Level for Unrestricted Land Uses of 2 milligrams/kilogram (mg/kg), which is the initially selected cleanup level for NWPL GP meter station facilities.

The Ecological Indicator Soil Concentrations for Protection of Terrestrial Plants and Animals (Table 749-3) are specified as 0.3 mg/kg, 0.1 mg/kg, and 5.5 mg/kg for Plants, Soil Biota, and Wildlife, respectively. Since wildlife receptors are protected at a soil concentration greater than the initially selected cleanup level of 2 mg/kg, soil at facilities that are in compliance with the 2 mg/kg mercury cleanup level will be protective of wildlife receptors. However, because the selected cleanup level of 2 mg/kg exceeds the limits established for the protection of plants and soil biota, modified site-specific TEE methods were selected in accordance with WAC 173-340-7493 for these potential exposures.

The selected TEE methods for mercury are site-specific soil bioassay for plants and soil biota.

3.1.2.2 Arsenic

Soil containing arsenic at the meter stations has been characterized to the MTCA Method A Soil Cleanup Level for Unrestricted Land Uses of 20 mg/kg, which is the initially selected cleanup level for NWPL GP meter station facilities.

The Ecological Indicator Soil Concentrations for Protection of Terrestrial Plants and Animals (Table 749-3) are specified as 10 mg/kg, 60 mg/kg, and 7 mg/kg for Plants, Soil Biota, and Wildlife, respectively. Since soil biota receptors are protected at a soil concentration greater than the initially selected cleanup level of 20 mg/kg, soil at facilities that are in compliance with the 20 mg/kg arsenic cleanup level will be protective of soil biota receptors. However, because the selected cleanup level of 20 mg/kg exceeds the limits established for the protection of plants and wildlife, modified site-specific TEE methods were selected in accordance with WAC 173-340-7493 for these potential exposures.

The selected TEE methods for arsenic are site-specific soil bioassay for plants and site-specific bioaccumulation evaluation for wildlife. Calculated indicator concentrations for the Mammalian herbivore surrogate receptor (vole) using the default values supplied in Tables 749-4 and 749-5 indicate that the established initial soil cleanup level for arsenic of 20 mg/kg is protective of mammalian herbivores. As such, the site-specific bioaccumulation evaluations for wildlife were only for mammalian predator species (shrew) and avian predator species (American Robin).

3.2 Site Groupings and Representative Sites

In the May 13, 2011 conditional approval letter, Ecology approved the division of the meter station facilities into four representative groups based on geographic area and regional climate, and the terrestrial ecological evaluation of appropriate representative facilities within each area. Data collected

at the representative facility(s) will be used for determining compliance with TEE for the other meter stations within each representative area.

The rationale for the site groupings is detailed in the TEE Program Document. The proposed representative areas as they relate to the NWPL GP pipeline are depicted on **Figure 1**. The representative facilities and meter station facilities within each area are presented in the following sections.

3.2.1 Northwest Washington Representative Area

The representative facility for the Northwest Washington Representative Area is the Snohomish Compressor Station for both mercury and arsenic.

Data collected at this facility will be considered representative of the following NWPL GP meter station facilities:

- Chehalis
- Evergreen Shores (Black Lake)
- McCleary Aberdeen
- North Seattle – Everett
- North Tacoma
- Oak Harbor – Stanwood
- Olympia
- Sedro Woolley
- Shelton
- South Seattle
- South Tacoma
- Toledo

3.2.2 Southwest Washington/Columbia River Basin Representative Area

The representative facility for the Southwest Washington/Columbia River Basin Representative Area is the Washougal Compressor Station for both mercury and arsenic:

Data collected at this facility will be considered representative of the following NWPL GP meter station facilities:

- Deer Island
- Kalama
- Stevenson
- Stevenson #2
- Vanalco
- Vancouver
- Washougal

3.2.3 Central Washington Representative Area

The representative facility for the Central Washington Representative Area is Yakima Firing Center Meter Station for arsenic and Ellensburg Meter Station for mercury.

Data collected at these facilities will be considered representative of the following NWPL GP meter station facilities:

- Alcoa Wenatchee
- Burbank Heights
- Connell
- Ellensburg
- Goldendale
- Grandview
- John Day Dam
- Kawecki Chemical
- Kennewick
- Klickitat
- Lind
- Menan Starch
- Moses Lake
- Pasco
- Prosser
- Quincy
- Ritzville
- Sandvik Special Metals
- Sunnyside
- Unocal Finley
- Walla Walla
- Warden
- Wenatchee
- Yakima
- Zillah – Toppenish

3.2.4 Eastern Washington Representative Area

The representative facility for the Eastern Washington Representative Area is Spokane Mead Meter Station for arsenic and Star Road Meter Station for mercury.

Data collected at these facilities will be considered representative of the following NWPL GP meter station facilities:

- Cheney Medical Lake
- Colfax
- Genesee
- Pullman

- Spokane West
- Spokane – Mead
- Star Road

Note: In the Ecology approved TEE Program Document; it was originally proposed that the Cheney Medical Lake Meter Station facility would be used for the representative facility in the Eastern Washington sub-region. However, during the approval process for the TEE Program Document, the Cheney Medical Lake facility was remediated and there were no remaining soils at the site with the concentration ranges required for bioassay analysis. Therefore, an alternate location (*i.e.*, Starr Road) was selected as the representative facility for mercury.

3.3 TEE Sampling and Analysis

TEE samples were collected from each representative facility where previously collected data indicated that COCs in soil were close to the initially selected cleanup level for each COC (*i.e.*, 2 mg/kg for mercury and 20 mg/kg for arsenic). Prior to performing the necessary TEE analysis, a sample was collected from each TEE sample and submitted for confirmation analysis to verify the COC concentration.

Samples for confirmation analyses were submitted to Friedman & Bruya, Inc. of Seattle, Washington or ESC Lab Sciences of Mt. Juliet, Tennessee for analysis of mercury by EPA Method 7471 and arsenic by EPA Method 6010B, as applicable.

As indicated in the TEE Program Document, TEE samples qualified for bioassay analysis and bioaccumulation factor (BAF) testing if the concentration for mercury ranged from 2 mg/kg to 6 mg/kg, and/or the concentration for arsenic ranged from 20 mg/kg to 60 mg/kg. The TEE samples selected from each representative facility, original COC concentration, and confirmation concentration are presented in Table 1. Laboratory analytical reports for confirmation soil samples are provided in Attachment C.

With the exception of arsenic in the Southwestern Washington/Columbia River Basin, Central Washington, and Eastern Washington representative areas, each TEE sample presented in Table 1 qualified for bioassay analysis and/or BAF testing in accordance with the concentration ranges presented in the TEE Program Document. For the remaining representative areas, there were no concentrations detected above the initially selected arsenic cleanup level of 20 mg/kg. Therefore, the maximum arsenic concentration detected in each of the representative areas was analyzed for TEE compliance.

3.3.1 Soil Bioassay

Soil bioassay analyses were conducted to evaluate the protectiveness of mercury concentrations in soil to vascular plants and soil biota and arsenic concentrations in soil to vascular plants. Soil for bioassay analyses were submitted to Nautilus Environmental (Nautilus), a Department of Ecology accredited laboratory located in Tacoma, Washington.

As presented in the TEE Program Document, soil bioassay for plants was conducted in accordance with Ecology Publication No. 96-324, *Early Seedling Growth Protocol for Soil Toxicity Screening*. Soil

bioassay for soil biota was conducted in accordance with Ecology Publication No. 96-327, *Earthworm Bioassay Protocol for Soil Toxicity Screening*. No soil dilution was performed prior to analysis.

3.3.2 Bioaccumulation Study

In order to assess the protectiveness of the established initial cleanup level for arsenic in soil of 20 mg/kg for potential wildlife receptors, a 28-day earthworm (*Eisenia fetida*) bioaccumulation study was conducted, as allowed by WAC 173-340-7493(3)(c)(i). For predatory wildlife receptors, the surrogate species are the American Robin and the Shrew; both are ground-feeding carnivorous species. Therefore, in accordance with Ecology's Wildlife Exposure Model for Site-Specific Evaluations (WEM; Table 749-4), the potential exposure pathway for these receptors is through consumption of worms living in contaminated soil.

The selected soil samples were submitted to Nautilus. The methodology used for growing worms in contaminated media was in accordance with the *Standard Guide for Conducting Laboratory Soil Toxicity or Bioaccumulation Tests with the Lumbricid Earthworm Eisenia Fetida* (ASTM E1676-04, 2007).

Following the 28-day bioaccumulation incubation period, the earthworms were removed from the soil, placed in chemistry containers, and submitted to Test America of Seattle, Washington for determination of arsenic concentration by EPA method 6010B.

Results of the earthworm bioaccumulation study and confirmation soil sampling were subsequently used to calculate site-specific BAFs for the selected representative sites. BAFs were calculated by dividing the worm arsenic concentration by the confirmation soil arsenic concentration for each representative facility. The calculated site-specific BAFs were then used to calculate region-specific indicator concentrations that are considered protective of potential wildlife receptors using the equations provided in the WEM, Table 749-4 in MTCA. As no Toxicity Reference Value for the more toxic form of arsenic (arsenic III) was provided in MTCA Table 749-4 for the American Robin, EPI used a value of 2.24 mg/kg-day as provided in the U.S. EPA document, *Ecological Soil Screening Levels for Arsenic*, March 2005, to calculate the region-specific indicator concentrations for the avian predator. This is a more conservative value than that provided in MTCA for the less toxic arsenic V.

4.0 FINDINGS

The results of the bioassay analysis and BAF study are presented in the following sections. The Soil Toxicity Evaluation report prepared by Nautilus is included as Attachment D.

4.1 Lettuce Bioassay Tests

Results of the lettuce bioassay tests conducted on soils from representative meter station facilities impacted with mercury are as follows:

- Snohomish Compressor Station (Northwest Washington Representative Area) – mercury concentration 2.5 mg/kg – **soil not toxic**.
- Washougal Compressor Station (Southwest Washington/Columbia River Representative Area) – mercury concentration 2.6 mg/kg – **soil not toxic**.
- Ellensburg Meter Station (Central Washington Representative Area) – mercury concentration 2.8 mg/kg – **soil not toxic**.
- Star Road Meter Station (Eastern Washington Representative Area) – mercury concentration 3.3 mg/kg – **soil not toxic**.

Results of the lettuce bioassay tests indicate that the initially established soil cleanup level for mercury of 2 mg/kg is protective of plants in each of the representative areas.

Results of the lettuce bioassay tests conducted on soils from representative meter station facilities impacted with arsenic indicate:

- Snohomish Compressor Station (Northwest Washington Representative Area) – arsenic concentration 48.1 mg/kg – **soil not toxic**.
- Washougal Compressor Station (Southwest Washington/Columbia River Representative Area) – arsenic concentration 16 mg/kg – **soil not toxic**.
- Yakima Firing Center Meter Station (Central Washington Representative Area) – arsenic concentration 14 mg/kg – **soil not toxic**.
- Spokane Mead Meter Station (Eastern Washington Representative Area) – arsenic concentration 18.1 mg/kg – **results inconclusive***.

*Note: The control sample for the lettuce bioassay sample from Spokane Mead Meter Station did not meet the minimum criteria for seeding growth and therefore the results were inconclusive. The lettuce bioassay test will be re-performed on the TEE sample from Spokane Mead.

Results of the lettuce bioassay tests indicate that the initially established soil cleanup level for arsenic of 20 mg/kg is protective of plants in the Northwest Washington Representative Area. For the Southwest Washington/Columbia River and Central Washington Representative Areas, the concentration analyzed represents the arsenic concentration that is protective of plants. No arsenic concentration protective of plants has yet been established for the Eastern Washington Representative Area.

4.2 Earthworm Bioassay Tests

Results of the earthworm bioassay tests conducted on soils from representative meter station facilities impacted with mercury indicate:

- Snohomish Compressor Station (Northwest Washington Representative Area) – mercury concentration 2.5 mg/kg – **soil not toxic**.
- Washougal Compressor Station (Southwest Washington/Columbia River Representative Area) – mercury concentration 2.6 mg/kg – **soil not toxic**.
- Ellensburg Meter Station (Central Washington Representative Area) – mercury concentration 2.8 mg/kg – **soil not toxic**.
- Star Road Meter Station (Eastern Washington Representative Area) – mercury concentration 3.3 mg/kg – **soil not toxic**.

Results of the earthworm bioassay tests indicate that the initially established soil cleanup level for mercury of 2 mg/kg is protective of soil biota in each of the representative areas.

4.3 Earthworm 28-day Bioaccumulation Study

Results of the 28-day earthworm bioaccumulation study conducted using soils from representative meter station facilities impacted with arsenic indicate:

- For the Snohomish Compressor Station (Northwest Washington Representative Area), the calculated BAF was 0.16, and the calculated indicator concentrations for arsenic in soil that are considered protective of avian predators and mammalian predators are 58 mg/kg and 47 mg/kg, respectively.
- For the Washougal Compressor Station (Southwest Washington/Columbia River Representative Area), the calculated BAF was 0.26, and the calculated indicator concentrations for arsenic in soil that are considered protective of avian predators and mammalian predators are 45 mg/kg and 30 mg/kg, respectively.
- For the Yakima Firing Center Meter Station (Central Washington Representative Area), the calculated BAF was 0.53, and the calculated indicator concentrations for arsenic in soil that are considered protective of avian predators and mammalian predators are 29 mg/kg and 15 mg/kg, respectively.
- For the Spokane Mead Meter Station (Eastern Washington Representative Area), the calculated BAF was 0.13, and the calculated indicator concentrations for arsenic in soil that are considered protective of avian predators and mammalian predators are 63 mg/kg and 56 mg/kg, respectively.

Calculation worksheets for region-specific soil indicator concentrations that are considered protective of wildlife calculated using Site-specific BAF values determined from the 28-day earthworm bioaccumulation studies are presented as Attachment E.

4.4 Data Summary

Table 2 summarizes the cumulative TEE data collected during this study.

Based on the work documented herein, the TEE cleanup levels that are protective of all potential terrestrial and ecological receptors for the representative areas are as follows:

- Northwest Washington Representative Area
 - Arsenic – 47 mg/kg
 - Mercury – 2.5 mg/kg
- Southwest Washington/Columbia River Representative Area
 - Arsenic – 16 mg/kg
 - Mercury – 2.6 mg/kg
- Central Washington Representative Area
 - Arsenic – 14 mg/kg
 - Mercury – 2.8 mg/kg
- Eastern Washington Representative Area
 - Arsenic – No Value Yet Established
 - Mercury – 3.3 mg/kg

5.0 CONCLUSIONS

The conclusions of the modified Site-Specific TEE study conducted for the NWPL GP Meter Station Facilities in Washington State are as follows:

- Results of the lettuce and earthworm bioassay tests indicate that the established initial soil cleanup level for mercury of 2 mg/kg is protective of all potential ecological receptors at all of the selected representative meter station facilities.
- Results of the lettuce bioassay and earthworm bioaccumulation tests indicate that the established initial soil cleanup level for arsenic of 20 mg/kg is protective of potential ecological receptors in the Northwest Washington Representative Area.
- The TEE cleanup level for arsenic applicable to the Southwest Washington/Columbia River Representative Area is 16 mg/kg. This cleanup level is based on the protection of plants ecological pathway of concern.
- The TEE cleanup level for arsenic applicable to the Central Washington Representative Area is 14 mg/kg. This cleanup level is based on the protection of plants ecological pathway of concern.

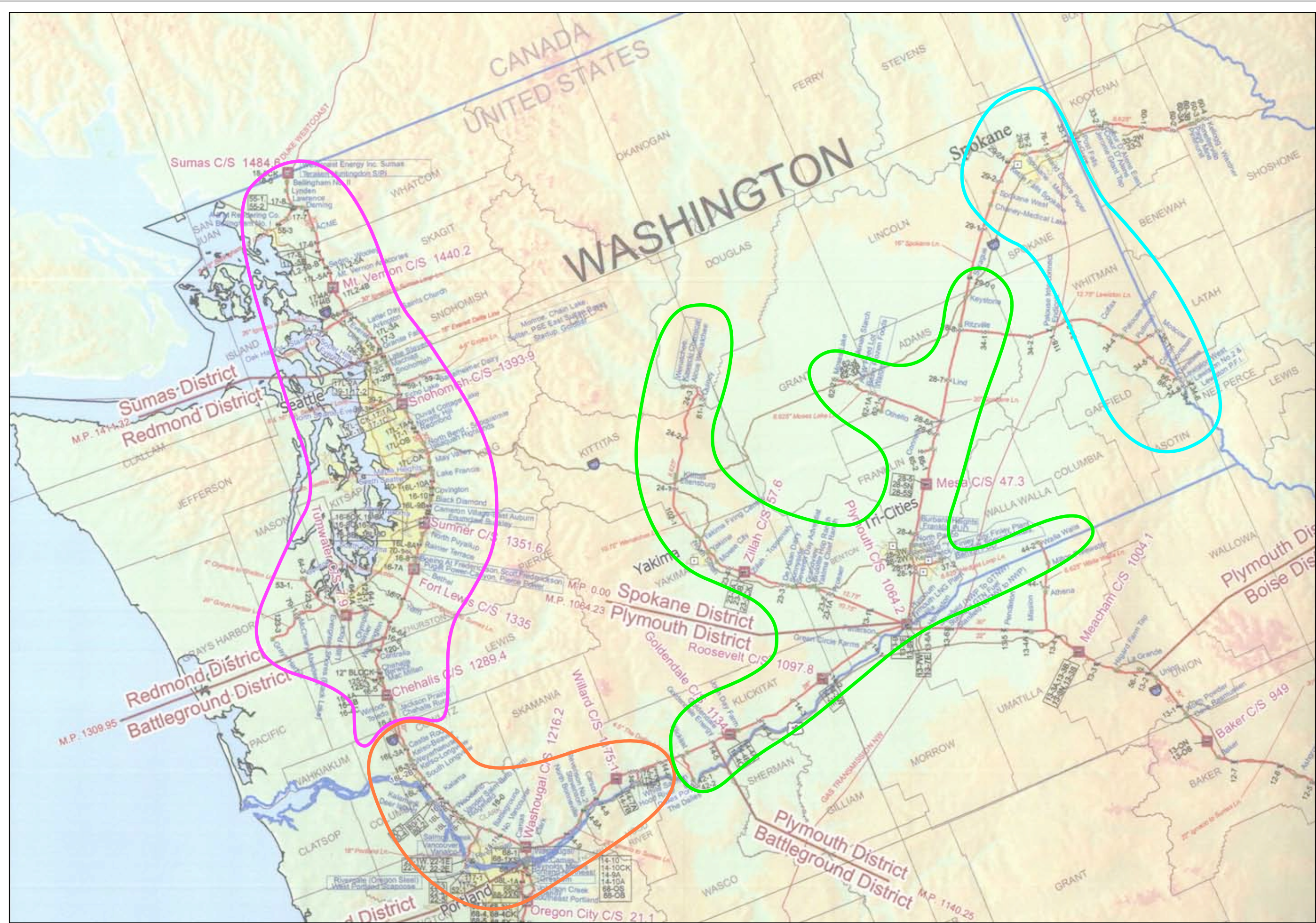
- The TEE cleanup level for arsenic established for the Southwest Washington/Columbia River and Central Washington Representative areas are based upon the maximum concentrations detected in each region. If in the future, arsenic is detected at concentrations that exceed the current maximum concentrations, NWPL GP reserves the right to perform additional lettuce bioassay tests to assess the protectiveness of arsenic in soil for that particular region.
- Based on the work conducted as part of this TEE, no TEE cleanup level for arsenic was established for the Eastern Washington Representative Area. The absence of a TEE cleanup level for arsenic in the Eastern Washington Representative Area represents a data gap for this study. NWPL GP is currently working to fill this data gap and will submit an addendum to this report when complete.

6.0 CLOSING

The representative area data described herein, and the cleanup levels that are protective of the potential ecological receptors developed during the site-specific TEEs will be used as a reference for compliance during the assessment and remediation of the individual meter station facilities. The procedures and methods for assessing and remediating each individual meter station facility will be presented in an *Assessment Results and Remedial Action Report* submitted for each meter station facility. These reports will include a section referencing the TEE work documented herein.

7.0 REFERENCES

- Environmental Partners, Inc. (EPI)¹, Portnoy Environmental², Williams Gas Pipeline², 2011, Terrestrial Ecological Evaluation Program, Northwest Pipeline GP Meter Station Facilities Throughout Washington State; ¹Seattle, Washington; ²Houston, Texas; May.
- U.S. Environmental Protection Agency (EPA), 2005, Ecological Soil Screening Levels for Arsenic; Office of Solid Waste and Emergency Response, Washington, DC; March.



PROJECT	47308.33
PREPARED FOR	NWPL GPWILLIAMS
LOCATION	WASHINGTON
SHEET	1 of 1
DRAWN BY	ARM
REVIEWED BY	EINK
DATE	01/13/11

ENVIRONMENTAL PARTNERS INC
 295 NE Gilman Boulevard, Suite 201
 Longview, Washington 99027

FIGURE 1

TEE SITE
 "REPRESENTATIVE AREAS"

KEY:

- NORTHWEST WASHINGTON
- SOUTH WASHINGTON/COLUMBIA BASIN
- CENTRAL WASHINGTON
- EASTERN WASHINGTON



NOT TO SCALE

Table 1
TEE Bioassay Soil and Bioaccumulation Confirmation Sample Results (in mg/kg)
and Bioaccumulation Factor for Arsenic
Northwest Pipeline GP
Washington State Meter Station Facilities

Region	Representative Facility	TEE Sample	LAB Report	Mercury			Arsenic				
				Original Concentration ^A	Bioassay Sample Collection Date	Confirmation Sample Analytical Result ^A	Original Concentration ^B	Bioassay Sample Collection Date	Confirmation Sample Analytical Result ^B	<i>E. fetida</i> 28-Day Analytical Result ^C	Bioaccumulation Factor ^D
Northwest Washington Representation Area	Snohomish Compressor Station	SH4-W64	105017	NA	NA	NA	44	5/3/11	48.1	7.8	0.16
		SHSB2-3:18	105180	12	5/13/11	2.5	NA	NA	NA	NA	NA
Southwest Washington / Columbia River Basin Representation Area	Washougal Compressor Station	WS11-AM24	L517283	NA	NA	NA	26	5/17/11	16	4.1	0.26
		WSSB6-0910	L517283	2.7	5/17/01	2.6	NA	NA	NA	NA	NA
Central Washington Representation Area	Yakima Firing Center Meter Station	YFSS-D1	L517283	NA	NA	NA	<0.21	5/17/11	14	7.4	0.53
	Ellensburg Meter Station	ELSS-0810	L517283	2.3	5/17/11	2.8	NA	NA	NA	NA	NA
Eastern Washington Representation Area	Spokane Mead Meter Station	BKG	106382	NA	NA	NA	N/A	5/16/11	18.1	<2.3	0.13 ^E
	Star Road Meter Station	1807	105338	3.3	5/16/11	3.3	NA	NA	NA	NA	NA

Notes: All concentrations in milligrams per kilogram (mg/kg) unless otherwise indicated.

^AMercury analysis by EPA Method 1631E and Method 7471

^BArsenic analysis by Method 200.8

^CArsenic analysis by EPA Method 6010B

^DUnitless

^EBioaccumulation Factor calculated using the *E. fetida* 28-day detection limit.

Table 2
TEE Cleanup Level Summary
Northwest Pipeline GP
Washington State Meter Station Facilities

Region	Representative Facility	COC	Concentration Protective of Soil Biota	Concentration Protective of Plants	Concentration Protective of Mamalian and Avian Predators	Final TEE Cleanup Level
Northwest Washington Representation Area	Snohomish Compressor Station	Arsenic	60 ^a	48.1	47	47
		Mercury	2.5	2.5	5.5 ^b	2.5
Southwest Washington / Columbia River Basin Representation Area	Washougal Compressor Station	Arsenic	60 ^a	16	30	16
		Mercury	2.6	2.6	5.5 ^b	2.6
Central Washington Representation Area	Yakima Firing Center Meter Station	Arsenic	60 ^a	14	15	14
	Ellensburg Meter Station	Mercury	2.8	2.8	5.5 ^b	2.8
Eastern Washington Representation Area	Spokane Mead Meter Station	Arsenic	60 ^a	NVE	56	NVE
	Star Road Meter Station	Mercury	3.3	3.3	5.5 ^b	3.3

Notes: All concentrations in milligrams per kilogram (mg/kg) unless otherwise indicated.

a Book value for arsenic concentration protective of soil biota (MTCA Table 749-3)

b Book value for mercury concentration protective of mamalian and avian predators (MTCA Table 749-3)

NVE Lettuce bioassay control sample not valid, result inconclusive and therefore no value yet established

Attachment A

Terrestrial Ecological Evaluation Program

Northwest Pipeline GP Meter Station Facilities Throughout Washington State

Prepared For:

Northwest Pipeline GP/Williams Gas Pipeline
P.O. Box 58900
Salt Lake City, Utah 84158

May 2011

Prepared By:

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Senior Geologist

Eric Michael Koltes

Thomas C. Mein FOR

Alan Hopkins, P.G.
Portnoy Environmental
Principal

EPI Project Number: 47308.33

QR *EL*

TR *EL*

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1.0 INTRODUCTION

This *Terrestrial Ecological Evaluation Program* document provides the rationale, methodology, and procedures proposed for Terrestrial Ecological Evaluations (TEEs) for Northwest Pipeline General Partnership (NWPL GP) meter station facilities, as required by the Model Toxics Control Act (RCW 70.105D) and its implementing regulations (WAC 173-340), which are collectively referred to herein as “MTCA”.

NWPL GP is evaluating the environmental conditions at over 70 meter station facilities throughout Washington State, which have similar site conditions (*i.e.*, uncapped commercial/industrial type facilities, in rural locations, identical site usage, and the same single contaminant). The meter station facilities are where gas is being regulated and metered from the main supply pipelines to local distribution companies (LDCs) or a wholesale customers. The LDC then distributes the gas to local consumers.

NWPL GP originally submitted a draft *Terrestrial Ecological Evaluation Program* document to Mr. Dave Sternberg at Ecology on October 11, 2010. The October 11, 2010 document was disseminated to and reviewed by each of the four Ecology regional Voluntary Cleanup Program (VCP) managers for NWPL GP facilities. Consolidated comments were returned to NWPL GP via email on November 8, 2010.

NWPL GP submitted a *Technical Memorandum Re: Response to Ecology Comments – Terrestrial Ecological Evaluation Program: Northwest Pipeline GP Meter Station Facilities Throughout Washington State* dated January 13, 2011 (Technical Memorandum). The Technical Memorandum was again disseminated to and reviewed by each of the four Ecology regional VCP managers. Ecology comments and concerns were consolidated and communicated via Letter *Re: Transmittal of Ecology Comments on the* [Technical Memorandum] dated March 29, 2011.

This revised document incorporates each of the comments and concerns raised by Ecology in the March 29, 2011 transmittal letter.

This document has been prepared in order to evaluate NWPL GP meter station facilities for TEE compliance for the two confirmed contaminants of concern (COCs); inorganic mercury and arsenic. No other COCs have been identified for NWPL GP meter station facilities. The procedures and methods for assessing each individual meter station facility will be presented in an *Assessment Results and Remedial Action Report* submitted for each meter station facility.

1.1 Facility Description

Meter station facilities are small (typically less than ½ acre) and are relatively simple to assess and remediate. A meter station typically consists of several pipe runs and a small meter building or canopy cover, within a fenced, gravel-covered lot. Meter stations are typically located proximal to the main pipeline. The meter stations have controlled access and the general maintenance of these facilities includes active housekeeping, maintenance such as weed suppression, and maintenance of the integrity of the fencing, gates, and interior buildings/structures.

Based on work conducted since 2005 and prior knowledge of site conditions, a thorough understanding of typical site conditions such as mode of release, vertical and horizontal migration of impacts, hot spots, and contaminant distribution has been formed.

1.2 Conceptual Site Model

The principal COC at NWPL GP meter station facilities is inorganic mercury. The primary source of mercury releases has been accidental spillage of inorganic mercury during historic maintenance and calibration of a certain type of differential pressure manometer (meters) that contained mercury (*i.e.*, American A-88 meters). NWPL GP used such manometers to measure the differential pressures across orifice plates in order to calculate flow volumes through the pipelines, laterals, and taps that supply its customers. It is important to note that not all of the manometers historically used by NWPL GP contained mercury and that the installation of manometers that utilized mercury was phased out in the mid-to-late 1980's.

A secondary, and less common source of potential mercury releases at NWPL GP meter station facilities has been from "thermowells". Thermowells are test tube-shaped "wells" installed in the meter station piping into which thermometers were placed to measure gas temperatures. In some instances, mercury was also placed in the well to improve the thermal conductance between the well and thermometer. The practice of placing mercury in thermowells varied regionally along the NWPL GP pipeline system. The thermowells did not contain large amounts of mercury, but there was the potential for some spillage or drippage when a thermowell was filled and/or when a thermometer was inserted and/or removed. The use of mercury in thermowells was phased out by 1993.

Both the former A-88 meters and the thermowells are point sources of release. These releases have generally been to either bare soil or gravel covered surfaces beneath and adjacent to the meters and above grade portions of the piping runs. These areas are typically either under cover of a supported metal roof or inside a metal building to protect the equipment from the weather.

A less common COC at NWPL GP meter station facilities is arsenic. Although the exact source of arsenic is not known, releases of arsenic appear to be operationally related, surficial releases. Arsenic impacts have typically been identified near buildings and operational equipment. Concentrations are highest at or near the ground surface and attenuate quickly with depth.

2.0 PROBLEM FORMULATION

MTCA requires the completion of a TEE in accordance with WAC 173-340-7490.

2.1 Primary TEE Exclusions

The NWPL GP meter station facilities typically do not qualify for the primary exclusions from the TEE documented in WAC 173-340-7491(1) because of their often rural locations, uncapped site conditions (*i.e.*, typically the facilities are gravel-covered), and the contamination is surficial in nature (*i.e.*, typically less than 3 feet). Therefore, further evaluation is required.

2.2 Simplified TEE Standards

On June 23, 2010, NWPL GP participated in a video conference meeting with the Ecology Voluntary Cleanup Program (VCP) managers to present a proposed “model approach” program by which NWPL GP meter stations could qualify for a Simplified TEE based on the qualifying regulations documented in WAC 173-340-7491(2)(a). While Ecology agreed that on an individual basis certain meter station facilities *may* qualify for a Simplified TEE, Ecology had too many concerns to approve the program as a whole using the model approach presented.

2.3 Modified Model TEE based upon Site-Specific TEE

Since Ecology had concerns with approving a model approach for justifying a Simplified TEE for meter station facilities, NWPL GP is proposing a modified model approach TEE program herein based upon the Site-Specific TEE procedures documented in WAC 173-340-7493.

As previously indicated, the primary COC at the meter stations is inorganic mercury and a less common COC is arsenic.

Inorganic mercury soil impacts at the meter stations have been characterized to the MTCA Method A Soil Cleanup Level for Unrestricted Land Uses of 2 milligrams/kilogram (mg/kg), which is the initially selected cleanup level for NWPL GP meter station facilities. The Ecological Indicator Soil Concentrations for Protection of Terrestrial Plants and Animals (Table 749-3) are specified as 0.3 mg/kg, 0.1 mg/kg, and 5.5 mg/kg for Plants, Soil Biota, and Wildlife, respectively. Since wildlife receptors are protected at a soil concentration greater than the initially selected cleanup level of 2 mg/kg, facilities that are in compliance with the 2 mg/kg mercury cleanup level will be protective of wildlife receptors. However, because the selected cleanup level of 2 mg/kg exceeds the limits established for the protection of plants and soil biota, it is proposed to perform a modified Site-Specific TEE according to WAC 173-340-7493 for these potential exposures.

Arsenic soil impacts at the meter stations have been characterized to the MTCA Method A Soil Cleanup Level for Unrestricted Land Uses of 20 mg/kg, which is the initially selected cleanup level for NWPL GP meter station facilities. The Ecological Indicator Soil Concentrations for Protection of Terrestrial Plants and Animals (Table 749-3) are specified as 10 mg/kg, 60 mg/kg, and 7 mg/kg for Plants, Soil Biota, and

Wildlife, respectively. Since soil biota receptors are protected at a soil concentration greater than the initially selected cleanup level of 20 mg/kg, facilities that are in compliance with the 20 mg/kg arsenic cleanup level will be protective of soil biota receptors. However, because the selected cleanup level of 20 mg/kg exceeds the limits established for the protection of plants and wildlife, it is proposed to perform a modified Site-Specific TEE according to WAC 173-340-7493 for these potential exposures.

2.3.1 Exposure Pathways

The primary exposure pathway for inorganic mercury and arsenic at the NWPL GP meter stations occurs via direct contact. The contact with contaminated soil can directly impact vegetation and soil biota. Indirect impacts can occur when animals feed on affected media, resulting in bioaccumulation of contaminants through the food chain. These secondary receptors could include ground-feeding birds and mammals, and small-mammal predators. Plants exposed to contaminants may directly uptake the contamination from the soil in their roots. Animals may be exposed from direct contact with contaminated soil or by consuming affected plants and/or soil biota.

2.3.2 Receptors of Concern

The receptors of concern differ for mercury and arsenic. The receptors of concern for both of these compounds are summarized below.

2.3.2.1 Receptors of Concern – Mercury

As indicated above, the inorganic mercury cleanup level for NWPL GP meter station facilities is 2 mg/kg. The inorganic mercury ecological indicator soil concentration for protection of wildlife receptors is 5.5 mg/kg, which is based on Ecology's Wildlife Exposure Model for Site-specific Evaluations (Table 749-4). Therefore, wildlife receptors such as potentially exposed avian or mammalian receptors are not considered receptors of concern at NWPL GP meter station facilities that meet the 2 mg/kg cleanup level.

Assuming that the 2 mg/kg selected cleanup level for inorganic mercury has been achieved, the primary receptors of concern for mercury include vascular vegetation and soil biota.

2.3.2.2 Receptors of Concern – Arsenic

The arsenic cleanup level for NWPL GP meter stations is 20 mg/kg. The arsenic ecological indicator soil concentration for protection of soil biota receptors is 60 mg/kg. Therefore, soil biota receptors such are not considered receptors of concern at NWPL GP meter station facilities that meet the 20 mg/kg arsenic cleanup level.

Assuming that the 20 mg/kg selected cleanup level for arsenic has been achieved, the primary receptors of concern for arsenic include vascular vegetation and wildlife.

2.3.3 Toxicological Assessment

The mercury cleanup levels established in MTCA on Table 749-3 for the TEE are based on toxicological effects described in the EPA document *Mercury Study: Report to Congress, Volume VI: An Ecological Assessment for Anthropogenic Mercury Emissions in the United States* (EPA-452/R-97-008, December 1997), which stated that “earthworms accumulated an average of 21.3 times the mercury concentration of the soil to which they were exposed” (Beyer *et al.*, 1985).

Much of the research done on the effects of mercury toxicity is based on methylmercury. Methylmercury is a neurotoxin capable of impacting reproductive health, causing nervous tissue and liver damage, and impairing motor functions in birds and mammals (EPA-425/R-97-008).

Since the impacts at NWPL GP meter stations are from inorganic mercury, which can be converted to the more toxic form of methylmercury through biological methylation, collecting site-specific toxicological data is essential for determining if the initially selected cleanup level of 2 mg/kg is protective of vascular vegetation and soil biota.

An initial toxicological literature study was performed to determine if arsenic could be ruled out for any of the potential receptors of concern. Based on the toxicological information obtained, it is unlikely that arsenic can be ruled out of TEE consideration. The sampling proposed herein will provide empirical site- and compound-specific toxicological data to determine protective concentrations of arsenic. This data will be more beneficial than performing an overly exhaustive literature study for arsenic.

3.0 METHODOLOGY

The proposed modified Site-Specific TEE will identify and address the issue of soil toxicity at the NWPL GP meter stations and its effects on vascular plants and soil biota.

The approach proposed herein is to divide Washington State into representative areas based on regional climate and geography and to collect empirical data at a representative facility within each area. The other meter stations assessed and remediated within a given representative area will utilize the data collected at the area's representative facility for determining compliance with TEE.

The proposed division of Washington State includes four ecological regions, focusing mainly on geographic location and its associated climate systems. These proposed representative areas include:

- a. Northwest Washington: located in the Puget Sound trough with a maritime climate, forested foothills, and abundant riparian habitat. Experiences high volumes of rainfall, averaging 40-80-inches annually. Significant development has occurred along the Interstate-5 corridor, which the NWPL GP pipeline parallels.
- b. Southwest Washington/Columbia River Basin: located to the west of the Cascade Mountain Range. Climate is similar to Northwest Washington; however, rainfall is slightly greater, receiving an annual precipitation of 55-140-inches.
- c. Central Washington: located to the east and in the rain shadow of the Cascade Mountain Range and stretches east toward the Columbia Plateau of central Washington. Precipitation averages 20-inches annually, encouraging growth of shrub-steppe vegetation.
- d. Eastern Washington: located near the Washington/Idaho border, near the foothills of the Canadian Rocky Mountain Range. Precipitation averages 30-inches annually and vegetation ranges from a sage-steppe ecosystem to evergreen forests.

The proposed representative areas as they relate to the NWPL GP pipeline are depicted on **Figure 1**.

3.1 Soil Bioassay

Soil bioassay analysis will be necessary to evaluate the protectiveness of mercury concentrations for vascular plants and soil biota. Bioassay analysis will be necessary to evaluate the protectiveness of arsenic concentrations for vascular plants.

In order to address whether chemical impacts to representative soils are protective of vascular plants and soil biota, soil samples will be subjected to bioassay screening as specified in WAC 173-340-7493(3)(b)(i). The samples for bioassay screening analyses will be collected from areas where the concentrations of impacts are representative of the initial cleanup levels selected for each compound

(i.e., 2 mg/kg for mercury and 20 mg/kg for arsenic). The previously collected assessment data will be used to determine the sampling location. No soil dilution will be performed prior to analysis.

In order to confirm the contaminant concentration prior to bioassay analysis, a sample will be submitted from the bioassay sample collected and will be analyzed for mercury using EPA Method 7471 and arsenic using EPA Method 6010B.

Bioassay tests proposed herein are to be performed on concentrations of soil that are at, or slightly higher than the initially selected cleanup level of 2 mg/kg for mercury and 20 mg/kg for arsenic, meaning that soils that are representative of the cleanup level for each COC, or slightly more contaminated than post-remedial concentrations, will be used for the bioassays. Therefore, if the bioassays on the more-highly contaminated soil are shown to be protective of ecological risks, soils from sites remediated to 2 mg/kg for mercury and 20 mg/kg for arsenic are also considered protective.

For purposes of this TEE, the acceptable range of concentrations for performing the bioassay analysis shall be considered between 2 and 6 mg/kg for mercury, and between 20 mg/kg and 60 mg/kg for arsenic.

If the bioassay screening analysis determines that the soils are not protective of plants and/or soil biota for a particular region, then serial dilutions of samples will be performed to determine concentrations that are protective. If serial dilutions are necessary, contaminant analysis will be performed on the diluted soils to confirm the concentration of COCs prior to performing additional bioassay analysis.

The methodology for the soil bioassay for plants will be in accordance with the Ecology Publication No. 96-324, *Early Seedling Growth Protocol for Soil Toxicity Screening*. The methodology for soil bioassay for soil biota will be in accordance with the Ecology Publication No. 96-327, *Earthworm Bioassay Protocol for Soil Toxicity Screening*. The soil bioassay analysis will be performed by Nautilus Environmental, a Department of Ecology accredited laboratory located in Tacoma, Washington.

3.2 Bioaccumulation Factor Calculation

As presented above, arsenic is the only COC applicable to potential wildlife receptors and requires further evaluation for protectiveness.

For wildlife receptors, the surrogate species are the American Robin and the Shrew; both are ground-feeding carnivorous species. Therefore, in accordance with Ecology's Wildlife Exposure Model for Site-Specific Evaluations (WEM; Table 749-4), the potential exposure pathway for these receptors is through consumption of worms living in contaminated soil. The driving factor in calculating a site-specific indicator concentration using the WEM is the bioaccumulation factor (BAF) for worms living in the contaminated media. In order to calculate site-specific indicator concentrations for wildlife receptors, site-specific BAFs for arsenic will be assessed as allowed by WAC 173-340-7493(3)(c)(i).

The BAFs for biota will be measured by collecting and analyzing worm samples living in representative arsenic-contaminated soils. If worms are not available in the representative soils, other biota (e.g., spiders, potato bug, etc.) will be collected and analyzed in lieu of worms.

If no biotas are present in the representative soils, worms will be grown in contaminated media and then analyzed for arsenic concentration. Using previously collected assessment data to determine the sampling location, contaminated media will be collected for purposes of growing worms. In order to confirm the contaminant concentration prior to growing worms, a sample will be submitted from the contaminated media collected and analyzed for arsenic.

Methodology for growing worms in contaminated media will be in accordance with the *Standard Guide for Conducting Laboratory Soil Toxicity or Bioaccumulation Tests with the Lumbricid Earthworm Eisenia Fetida* (ASTM E1676-04, 2007).

After growing the worms in the contaminated media using the above method, the worms will be analyzed for arsenic.

The BAFs are determined by dividing the concentrations of arsenic within the biota samples by the concentration within the soil in which the biota were collected or grown. The resulting BAFs will then be used in the WEM equations to calculate site-specific concentrations that are protective of wildlife receptors.

4.0 SITE GROUPINGS AND REPRESENTATIVE SITES

The following summarizes the NWPL GP proposed representative areas, the associated NWPL GP meter station facilities, and the proposed representative facility for each area; see **Figure 1**.

4.1 Northwest Washington Representative Area

The representative facility for the Northwest Washington Representative Area is the Snohomish Compressor Station for both arsenic and mercury.

Data collected at this facility will be representative of the following NWPL GP meter station facilities:

- Chehalis
- Evergreen Shores (Black Lake)
- McCleary Aberdeen
- North Seattle – Everett
- North Tacoma
- Oak Harbor – Stanwood
- Olympia
- Sedro Woolley
- Shelton
- South Seattle
- South Tacoma
- Toledo

4.2 Southwest Washington/Columbia River Basin Representative Area

The representative facility for the Southwest Washington/Columbia River Basin Representative Area is the Washougal Compressor Station for both arsenic and mercury:

Data collected at this facility will be representative of the following NWPL GP meter station facilities:

- Deer Island
- Kalama
- Stevenson
- Stevenson #2
- Vanalco
- Vancouver
- Washougal

4.3 Central Washington Representative Area

The representative facility for the Central Washington Representative Area is Yakima Firing Center Meter Station for arsenic and Ellensburg Meter Station for mercury.

Data collected at these facilities will be representative of the following NWPL GP meter station facilities:

- Alcoa Wenatchee
- Burbank Heights
- Connell
- Ellensburg
- Goldendale*
- Grandview*
- John Day Dam*
- Kawecki Chemical
- Kennewick
- Klickitat*
- Lind
- Menan Starch
- Moses Lake
- Pasco
- Prosser*
- Quincy
- Ritzville*
- Sandvik Special Metals
- Sunnyside
- Unocal Finley
- Walla Walla
- Warden
- Wenatchee
- Yakima*
- Zillah – Toppenish*

4.4 Eastern Washington Representative Area

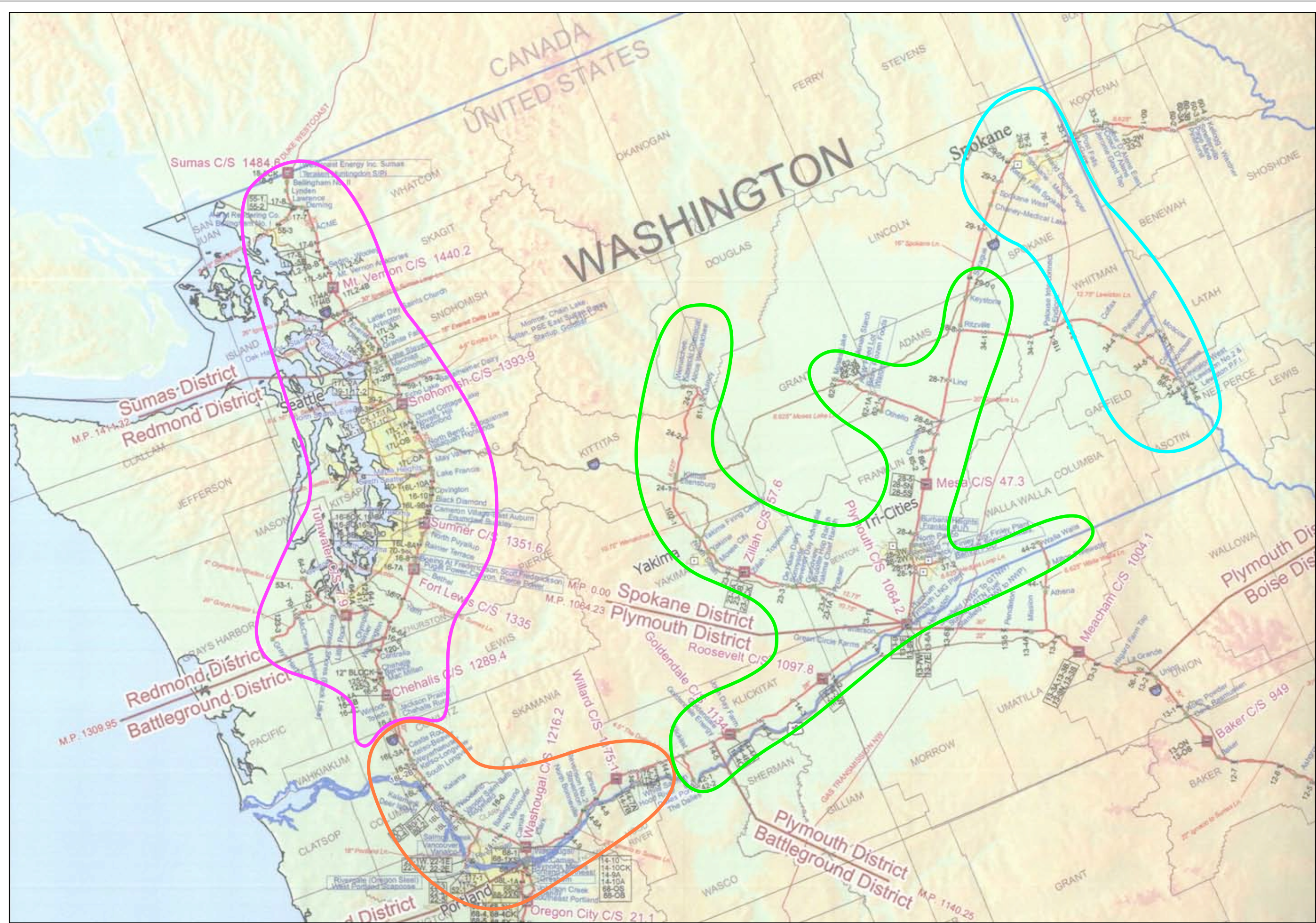
The representative facility for the Eastern Washington Representative Area is Spokane Mead Meter Station for arsenic and Cheney Medical Lake Meter Station for mercury:

Data collected at these facilities will be representative of the following NWPL GP meter station facilities:

- Cheney Medical Lake
- Colfax
- Genesee
- Pullman
- Spokane West
- Spokane - Mead

5.0 CLOSING

Upon written acceptance of this proposed modified Site-Specific TEE program by Ecology, an individual TEE will be submitted for each meter station facility/site using this document and the representative facility data as a reference for compliance.



PROJECT	47308.33
PREPARED FOR	NWPL GPWILLIAMS
LOCATION	WASHINGTON
SHEET	1 of 1
DRAWN BY	ARM
REVIEWED BY	EINK
DATE	01/13/11

ENVIRONMENTAL PARTNERS INC
 295 NE Gilman Boulevard, Suite 201
 Longview, Washington 98027

FIGURE 1

TEE SITE
 "REPRESENTATIVE AREAS"

KEY:

- NORTHWEST WASHINGTON
- SOUTH WASHINGTON/COLUMBIA BASIN
- CENTRAL WASHINGTON
- EASTERN WASHINGTON



NOT TO SCALE

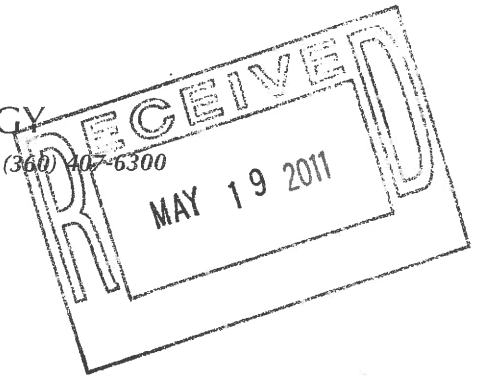
Attachment B



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

May 13, 2011



Mr. Aaron Galer, Environmental Scientist III
Williams - Northwest Pipeline
295 Chipeta Way # 1
Salt Lake City, UT 84108-1285

Mr. Mark S. Nelson, P.E., Group Leader, Environmental Remediation
Williams Gas Pipeline
P.O. Box 1396
Houston, TX 77251

Re: Transmittal of Ecology Approval and Comment on the revised *Terrestrial Ecological Evaluation Program, Northwest Pipeline GP Meter Station Facilities throughout Washington State, April 2011, prepared by Williams Gas Pipeline; Environmental Partners, Inc; and Portnoy Environmental.*

Dear Mr. Galer and Mr. Nelson:

Thank you for submitting the above-referenced revised Terrestrial Ecological Evaluation (TEE) Program document in response to our comments. **Ecology approves the above-referenced document provided that the following comment is incorporated:**

- The 3rd paragraph of Section 3.1 states that in order to confirm the contaminant concentration prior to bioassay analysis, samples will be analyzed for mercury and arsenic. However, a similar statement is not provided in Section 3.2. Please also add this to Section 3.2.

If you have any questions, please contact me at (360) 407-6247 or via e-mail at stee461@ecy.wa.gov.

Sincerely,

STeel

Steve Teel, LHG
Site Manager/Hydrogeologist
Toxics Cleanup Program
Southwest Regional Office

ST/ksc:TEE M-S approval May 2011

By certified mail: (7010 0780 0002 3400 6118 // 7010 0780 0002 3400 6088)

cc: Eric Koltes, Environmental Partners, Inc.
Mr. Alan Hopkins, P.G., Portnoy Environmental
Scott Rose – Ecology-SWRO
Dale Myers – Ecology-NWRO
Norm Peck – Ecology-CRO
Jason Shira – Ecology-CRO
Patti Carter – Ecology-ERO
Mike Hibbler – Ecology-ERO
Brendan Dowling – Ecology-ERO



Attachment C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
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Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

May 3, 2011

Clint Moseley, Project Manager
Portnoy Environmental
1414 W Sam Houston Pkwy N, Suite 170
Houston, TX 77043

RE: Snohomish TEE 534512-RXG99, F&BI 105017

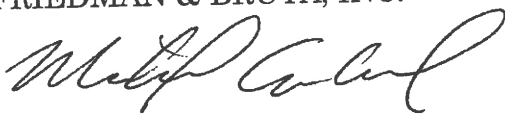
Dear Mr. Moseley:

Included are the results from the testing of material submitted on May 3, 2011 from the Snohomish TEE 534512-RXG99, F&BI 105017 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Eric Koltas, Tim Jenkins, Alan Hopkins, Mike Portnoy
PRT0503R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 3, 2011 by Friedman & Bruya, Inc. from the Portnoy Environmental Snohomish TEE 534512-RXG99 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Portnoy Environmental</u>
105017-01	SH3-AX36
105017-02	SH4-W64
105017-03	SH9-Q39

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: SH3-AX36
Date Received: 05/03/11
Date Extracted: 05/03/11
Date Analyzed: 05/03/11
Matrix: Soil
Units: mg/kg (ppm)

Client: Portnoy Environmental
Project: Snohomish TEE 534512-RXG99
Lab ID: 104017-01
Data File: 104017-01.016
Instrument: ICPMS1
Operator: AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	93	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	40.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	SH4-W64	Client:	Portnoy Environmental
Date Received:	05/03/11	Project:	Snohomish TEE 534512-RXG99
Date Extracted:	05/03/11	Lab ID:	104017-02
Date Analyzed:	05/03/11	Data File:	104017-02.017
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	95	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	48.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: SH9-Q39
Date Received: 05/03/11
Date Extracted: 05/03/11
Date Analyzed: 05/03/11
Matrix: Soil
Units: mg/kg (ppm)

Client: Portnoy Environmental
Project: Snohomish TEE 534512-RXG99
Lab ID: 104017-03
Data File: 104017-03.018
Instrument: ICPMS1
Operator: AP

Internal Standard:
Indium

% Recovery:
88

Lower
Limit:
60

Upper
Limit:
125

Analyte:

Concentration
mg/kg (ppm)

Arsenic

2.17

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Portnoy Environmental
Date Received:	Not Applicable	Project:	Snohomish TEE 534512-RXG99
Date Extracted:	05/02/11	Lab ID:	I1-307 mb
Date Analyzed:	05/03/11	Data File:	I1-307 mb.015
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower	Upper
Indium	91	Limit:	Limit:
		60	125

Analyte:	Concentration
	mg/kg (ppm)
Arsenic	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/03/11

Date Received: 05/03/11

Project: Snohomish TEE 534512-RXG99, F&BI 105017

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 104291-22 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	6.07	89 b	89 b	44-151	0 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	99	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - Analyte present in the blank and the sample.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - Analysis performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

105017

ME 05703/11

AI1

Portnoy Environmental

Alternate billing information:
Direct Bill to
Mark Nelson

Report to: Alan Hopkins
Email to: NWPL TEAM

Project Description: Snobomish TEG

Phone: C: Moseley
FAX:
Client Project #: PORTENVTX- WAHG
City/State Collected: ESC Key: 534512-RXG99

Site/Facility ID#: P.O.#: 534512-RXG99

Collected by (signature): C: Moseley

Collected by (signature):
 Rush? (Lab MUST Be Notified)
Same Day.....200%
Next Day.....100%
Two Day.....50%
Date Results Needed:
Email? __No__Yes
FAX? __No__Yes

Packed on Ice N Y
Sample ID
SH3-AX36
SH4-W64
SH9-Q39

Comp/Grab Matrix* Depth Date Time
soil 5/2/11
↓ ↓

Analysis/Container/Preservative

All Samples need TS, QC2MOD, EDD		Total AS	01	02	03						

Prepared by: *Friedman & Brumby*
ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

GoCode portenvtx
Template/Prelogin
Shipped Via:

Remarks/Contaminant
Sample # (lab use only)
1-per cm
5/4/11
MC

Chain of Custody Page 1 of 1

*Matrix SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Temp: all Temp: Other:

Samples returned via UPS FedEx Courier

Temp: Bottles Temp Date: NCE

Relinquished by: (Signature) _____ Date: 5/2/11 Time: 4:55

Relinquished by: (Signature) _____ Date: 5/3/11 Time: 0930

Relinquished by: (Signature) _____ Date: _____ Time: _____

Received by (Signature) *[Signature]*

Received by (Signature) *[Signature]*

Received for lab by (Signature) *[Signature]*

Sample received at: 14 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

May 17, 2011

Eric Koltes, Project Manager
Environmental Partners, Inc.
295 NE Gilman Blvd., Suite 201
Issaquah, WA 98027

RE: Snohomish C/S Job 47308.36, F&BI 105180

Dear Mr. Koltes:

Included are the results from the testing of material submitted on May 13, 2011 from the Snohomish C/S Job 47308.36, F&BI 105180 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
EPI0517R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 13, 2011 by Friedman & Bruya, Inc. from the Environmental Partners Snohomish C/S Job 47308.36, F&BI 105180 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID
105180-01

Environmental Partners
SHSB2-3:18

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/11

Date Received: 05/13/11

Project: Snohomish C/S Job 47308.36, F&BI 105180

Date Extracted: 05/17/11

Date Analyzed: 05/17/11

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

Sample ID
Laboratory ID

Total Mercury

SHSB2-3:18
105180-01 1/2

2.5

Method Blank

<0.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/17/11

Date Received: 05/13/11

Project: Snohomish C/S Job 47308.36, F&BI 105180

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
TOTAL MERCURY
USING EPA METHOD 1631E**

Laboratory Code: 105187-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	<0.1	101	100	45-162	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	107	63-144

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - Analyte present in the blank and the sample.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - Analysis performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



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Alan Hopkins and NWPL Team
Portnoy Environmental
1414 W. Sam Houston Pkwy. N., Suite 170
Houston, TX 77043

Report Summary

Friday May 27, 2011

Report Number: L517283

Samples Received: 05/20/11

Client Project:

Description:

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Tom Mellette, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-01

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : YFSS-1110

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.		96.		%	2540G	05/27/11
Arsenic	12.	1.0	12.	1.0	mg/kg	6010B	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-02

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : YFSS-D1

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.		97.		%	2540G	05/27/11
Arsenic	14.	1.0	14.	1.0	mg/kg	6010B	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
Portnoy Environmental
1414 W. Sam Houston Pkwy. N., Suite
Houston, TX 77043

ESC Sample # : L517283-03

Date Received : May 20, 2011
Description :

Site ID :

Sample ID : YFSS-D2

Project # :

Collected By :
Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.		96.		%	2540G	05/27/11
Arsenic	8.4	1.0	8.7	1.0	mg/kg	6010B	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-04

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : WS11-AM24

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	76.		76.		%	2540G	05/27/11
Arsenic	12.	1.0	16.	1.3	mg/kg	6010B	05/24/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Reported: 05/27/11 13:39 Printed: 05/27/11 13:39



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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-05

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : WSSB11-2

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.		87.		%	2540G	05/27/11
Arsenic	4.8	1.0	5.5	1.1	mg/kg	6010B	05/24/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
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 Houston, TX 77043

Date Received : May 20, 2011
 Description :
 Sample ID : WSSB11-1
 Collected By :
 Collection Date : 05/19/11 00:00

ESC Sample # : L517283-06
 Site ID :
 Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.		89.		%	2540G	05/27/11
Arsenic	5.4	1.0	6.0	1.1	mg/kg	6010B	05/24/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
 Note:
 The reported analytical results relate only to the sample submitted.
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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-07
 Site ID :
 Project # :

Date Received : May 20, 2011
 Description :
 Sample ID : ELSS-0810
 Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	92.		92.		%	2540G	05/27/11
Mercury	2.6	1.0	2.8	1.1	mg/kg	7471	05/25/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
 Note:
 The reported analytical results relate only to the sample submitted.
 This report shall not be reproduced, except in full, without the written approval from ESC.
 Reported: 05/27/11 13:39 Printed: 05/27/11 13:39



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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-08

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : ELSS-1009

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.		95.		%	2540G	05/27/11
Mercury	1.4	0.20	1.5	0.21	mg/kg	7471	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/27/11 13:39 Printed: 05/27/11 13:39



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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-09

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : ELSS-1109

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.		96.		%	2540G	05/27/11
Mercury	13.	2.0	14.	2.1	mg/kg	7471	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/27/11 13:39 Printed: 05/27/11 13:39



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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-10

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : WS6-AT35

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	90.		90.		%	2540G	05/27/11
Mercury	1.8	0.40	2.0	0.44	mg/kg	7471	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-11

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : WSSB6-0910

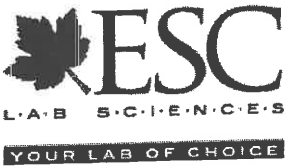
Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	93.		93.		%	2540G	05/27/11
Mercury	2.4	1.0	2.6	1.1	mg/kg	7471	05/25/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
 Note:

The reported analytical results relate only to the sample submitted.
 This report shall not be reproduced, except in full, without the written approval from ESC.
 Reported: 05/27/11 13:39 Printed: 05/27/11 13:39



12065 Lebanon Rd.
 Mt. Juliet, TN 37122
 (615) 758-5858
 1-800-767-5859
 Fax (615) 758-5859
 Tax I.D. 62-0814289
 Est. 1970

REPORT OF ANALYSIS

May 27, 2011

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

ESC Sample # : L517283-12

Date Received : May 20, 2011
 Description :

Site ID :

Sample ID : WSSB6-0911

Project # :

Collected By :
 Collection Date : 05/19/11 00:00

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	93.		93.		%	2540G	05/27/11
Mercury	2.4	1.0	2.5	1.1	mg/kg	7471	05/25/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.
 This report shall not be reproduced, except in full, without the written approval from ESC.
 Reported: 05/27/11 13:39 Printed: 05/27/11 13:39

Summary of Remarks For Samples Printed
05/27/11 at 13:39:32

TSR Signing Reports: 690
R5 - Desired TAT

See Tom M prior to all non Template logins for special notes if any. Tom M cell 406-3470

Sample: L517283-01 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-02 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-03 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-04 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-05 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-06 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-07 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-08 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-09 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-10 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-11 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068
Sample: L517283-12 Account: PORTENVTX Received: 05/20/11 08:45 Due Date: 05/27/11 00:00 RPT Date: 05/27/11 13:39
Refer to 05-0068

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

June 28, 2011

Eric Koltes, Project Manager
Environmental Partners, Inc.
295 NE Gilman Blvd., Suite 201
Issaquah, WA 98027

RE: Job 77380.36, F&BI 106382

Dear Mr. Koltes:

Included are the results from the testing of material submitted on June 28, 2011 from the Job 47380.36, F&BI 106382 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
EPI0628R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 28, 2011 by Friedman & Bruya, Inc. from the Environmental Partners Job 47380.36, F&BI 106382 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID
106382-01

Environmental Partners
SMSS-BG

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID: SMSS-BG
Date Received: 06/28/11
Date Extracted: 06/28/11
Date Analyzed: 06/28/11
Matrix: Soil
Units: mg/kg (ppm)

Client: Environmental Partners
Project: Job 47380.36, F&BI 106382
Lab ID: 106382-01
Data File: 106382-01.013
Instrument: ICPMS1
Operator: AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	86	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	18.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	Job 47380.36, F&BI 106382
Date Extracted:	06/27/11	Lab ID:	I1-438 mb
Date Analyzed:	06/28/11	Data File:	I1-438 mb.008
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	88	60	125

Analyte:	Concentration mg/kg (ppm)
----------	------------------------------

Arsenic	<1
---------	----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/28/11
Date Received: 06/28/11
Project: Job 47380.36, F&BI 106382

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 106364-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	6.60	100 b	95 b	44-151	5 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	100	80-120

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - Analyte present in the blank and the sample.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - Analysis performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
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e-mail: fbi@isomedia.com

May 31, 2011

Eric Koltes, Project Manager
Environmental Partners, Inc.
295 NE Gilman Blvd., Suite 201
Issaquah, WA 98027

RE: Tee 47308.36, F&BI 105338

Dear Mr. Koltes:

Included are the results from the testing of material submitted on May 26, 2011 from the Tee 47308.36, F&BI 105338 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
EPI0531R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 26, 2011 by Friedman & Bruya, Inc. from the Environmental Partners Tee Tee 47308.36, F&BI 105338 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
105338-01	SMSS-RA2
105338-02	SMSS-D2
105338-03	SMSS-RA1
105338-04	WSSB11-1
105338-05	WSSB11-2
105338-06	WS11-AM24
105338-07	Starroad-1507
105338-08	Starroad-1705
105338-09	Starroad-1807

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	SMSS-RA2	Client:	Environmental Partners
Date Received:	05/26/11	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	105338-01
Date Analyzed:	05/27/11	Data File:	105338-01.018
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	95	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	13.8

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	SMSS-D2	Client:	Environmental Partners
Date Received:	05/26/11	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	105338-02
Date Analyzed:	05/27/11	Data File:	105338-02.021
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	11.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	SMSS-RA1	Client:	Environmental Partners
Date Received:	05/26/11	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	105338-03
Date Analyzed:	05/27/11	Data File:	105338-03.022
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	92	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	16.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	WSSB11-1	Client:	Environmental Partners
Date Received:	05/26/11	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	105338-04
Date Analyzed:	05/27/11	Data File:	105338-04.023
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.96

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	WSSB11-2	Client:	Environmental Partners
Date Received:	05/26/11	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	105338-05
Date Analyzed:	05/27/11	Data File:	105338-05.024
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	91	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.84

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	WS11-AM24	Client:	Environmental Partners
Date Received:	05/26/11	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	105338-06
Date Analyzed:	05/27/11	Data File:	105338-06.025
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	89	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.56

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	Tee 47308.36, F&BI 105338
Date Extracted:	05/27/11	Lab ID:	I1-371 mb
Date Analyzed:	05/27/11	Data File:	I1-371 mb.015
Matrix:	Soil	Instrument:	ICPMS1
Units:	mg/kg (ppm)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Indium	89	60	125

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/31/11
Date Received: 05/26/11
Project: Tee 47308.36, F&BI 105338
Date Extracted: 05/27/11
Date Analyzed: 05/27/11

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Total Mercury</u>
Starroad-1507 105338-07 1/10	13
Starroad-1705 105338-08 1/10	6.1
Starroad-1807 105338-09 1/10	3.3
Method Blank	<0.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/31/11

Date Received: 05/26/11

Project: Tee 47308.36, F&BI 105338

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 105338-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	13.8	110 b	103 b	44-151	7 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	108	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/31/11
Date Received: 05/26/11
Project: Tee 47308.36, F&BI 105338

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
TOTAL MERCURY
USING EPA METHOD 1631E**

Laboratory Code: 105338-01 1/50 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	62	0 b	0 b	45-162	0 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	129	63-144

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - Analyte present in the blank and the sample.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht - Analysis performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the compound indicated is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

105 558

SAMPLE CHAIN OF CUSTODY

ME

05/26/11

BT1

end Report To Eric Koeres

Company Environmental Partners, Inc.

Address 295 NE Gilman Blvd.

City, State, ZIP Issaquah, WA 98027

Phone # (425) 395-0010 Fax # (425) 395-0011

SAMPLERS (signature) 

PROJECT ID/ADDRESS TEE

JOB # 47308.3C

SITE NAME TEE

REMARKS RUSH (BY 5/31)

PAGE # 1 OF 1

TURNAROUND TIME

Standard

RUSH BY 5/31

Rush charges authorized by: _____

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

ANALYSES REQUESTED

Sample ID	LAB ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes					
						8015 - GRO	8015 - DRO	BTEX by 8021B	BTEX by 602	VOC by 8260C	VOC by 524		ARSENIC	MERCURY			
SMSS-RA2	01	5/26/11		S	1												
SMSS-D2	02	}		S	1							X					
SMSS-RA1	03			S	1							X					
USSB11-1	04			S	1							X					
USSB11-2	05			S	1							X					
US11-AM24	06			S	1							X					
TA2ROAD-1507	07			S	1							X					
TA2ROAD-1705	08			S	1							X					
TA2ROAD-1807	09			S	1							X					

riedman & Bryna, Inc.

712 16th Avenue West

Seattle, WA 98119-2029

Phone: (206) 285-8282

Fax: (206) 283-5044

SIGNATURE

Relinquished by: 

PRINT NAME Eric Koeres

COMPANY

EPI

DATE

5/26/11

TIME

1445

Received by: 

Matt Langston

E+BI Inc

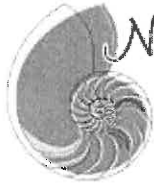
5/26/11

1415

Received by: _____

Sampler ID: 20

Attachment D



Nautilus Environmental, LLC

Soil Toxicity Evaluation

Northwest Pipeline GP Meter Station Facilities throughout Washington State

DRAFT Report

Date: September 1, 2011

Submitted to:

Environmental Partners, Inc.
295 NE Gilman Boulevard Suite 201
Issaquah, Washington 98027

Washington Laboratory
5009 Pacific Hwy East
Suite 2
Tacoma, WA 98424

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SIGNATURE PAGE



Washington Laboratory Manager

This report has been prepared based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party.

1.0 INTRODUCTION

Laboratory toxicity testing was conducted on soil samples collected from 7 sites near Northwest Pipeline General Partnership (NWPL GP) meter stations facilities, following site-specific terrestrial ecological evaluation (TEE) methodology under the Model Toxics Control Act (MTCA). The specific contaminants of concern for the bioassay component of the TEE were arsenic and inorganic mercury. Toxicity tests were conducted using the earthworm *Eisenia foetida*, of the family lumbricidae and the butter crunch lettuce seed *Lactuca sativa*. Two different tests were conducted with the earthworm, the 14-day survival test and a 28-day bioaccumulation test. Samples tested for bioaccumulation were then sent to TestAmerica, an analytical laboratory, for arsenic determinations. Testing was initiated June, 2011 at the Washington Laboratory of Nautilus Environmental, located in Tacoma, Washington. Test procedures followed methods published by Washington State Department of Ecology for the Toxics Cleanup Program and ASTM.

2.0 METHODS

2.1 Sample Receipt and Manipulation

Seven soil samples were collected by Environmental Partners personnel between May 3rd and 17th, 2011 into HPDE containers. Individual samples were in labeled plastic jars, transported in coolers, and were received by Nautilus on June 3rd, 2011. All samples were transported in coolers. Individual samples were in labeled plastic jars. Upon receipt in the laboratory, the coolers were opened and the contents inspected and compared with documentation provided on the chain-of-custody forms (COC), where discrepancies occurred, samples identities were confirmed with Environmental Partners. Sample temperatures were measured upon receipt and recorded on both the COC and in a bound logbook maintained in the laboratory. Samples were held in the dark at $4 \pm 2^{\circ}\text{C}$ until testing.

Large pieces of wood, debris and rocks were removed from soils prior to testing. No sieving was performed on the samples. Analysis of soil pH, conductivity, and moisture content were performed upon sample receipt.

Sample ID's with corresponding dates of collection, and test initiation dates for all three tests are provided in Table 1.

Table 1. Sample collection, receipt, expiration, and test initiation dates.

Client ID	Nautilus Log-In Number	Date Collected	Lettuce Test Initiation	14-day Earthworm Test Initiation	28-day Earthworm Test Initiation
SHSB2-3:18	S11-061	May 13, 2011	June 7, 2011	June 9, 2011	NT
WSSB6-0910	S11-055	May 17, 2011	June 7, 2011	June 9, 2011	NT
ELSS-0810	S11-057				
STARROAD 1807	S11-059	May 16, 2011	June 7, 2011	June 9, 2011	NT
SH4-W64	S11-062	May 3, 2011	June 7, 2011	NT	June 9, 2011
WS11-AM24	S11-051	May 17, 2011	June 7, 2011	NT	June 9, 2011
YFSS-D1	S11-053				

2.2 Lettuce seedling survival and biomass test methods

A lettuce seedling survival and biomass test was conducted on samples received June 3, 2011 using butter crunch lettuce seeds, *Lactuca sativa*. The organisms were obtained from Territorial Seed Company, Oregon. The tests were initiated on June 7, 2011. Tests were performed according to procedures presented by WADOE (1996) and ASTM (1994). Test procedures are summarized in Table 2.

Prior to test initiation, 300 g subsamples were collected from the negative control and each site, for use in the test, as well as for initial pH measurements. Using an Orion 230 meter, pH measurements were taken by making a slurry of de-ionized (DI) water and soil in a 1:1 ratio (i.e., 25 mL DI water: 25 g soil). Soil slurry pH was measured after allowing soil/water mixture to stir for 5 minutes. Once the measurement was taken, the slurry was allowed to settle for 30 minutes, after which the pH of the supernatant liquid was measured. Sample soils were hydrated with DI water to match control friability where necessary, and distributed into three poly flat 36-cell trays with humidity domes. Five replicates per sample, each containing 50 g of soil, were randomly distributed into trays. Sample distribution took place according to a randomization sheet and planting maps created in Excel. Trays were placed in an environmental chamber at 25°C under a 16:8 hour light:dark photoperiod.

Lighting for the test was provided by 2-bulb gro-lights placed over each planting tray. Light measurements were taken upon test initiation, day seven, and at termination using a Milwaukee SM 700 photometer. Test temperatures were measured daily from a surrogate test chamber.

Table 2. Summary of testing conditions for the lettuce survival and biomass test.

Test start date	June 7, 2011
Test end date	June 21, 2011
Test organism	<i>Lactuca sativa</i>
Test organism source	Territorial Seed Company, Cottage Grove, OR
Test duration	14 days
Test chamber	60-mL planting cell with 4 drainage holes in bottom
Test soil/replicate	50 g dry weight
Water source for hydration	De-ionized water
Control soil	70% sand, 20% kaolin clay, 10% peat moss, 0.45% CaCO ₃
Number of organisms/replicate	12
Number of replicates/sample	5
Test temperature	20-30°C
Illumination	16:8 hr light:dark photoperiod
Test acceptance criterion	≥90% mean germination in control organisms
Positive control reference toxicant	Boric acid

The tests were terminated on day 14, June 21, 2011. At test termination, the number of seedlings in each replicate was counted and observations on seedling condition (e.g., chlorosis, wilting) were recorded. The above-soil portion of each seedling was then cut at the soil using scissors; and placed in a pre-tared weigh boat corresponding to the replicate number. A 25 g subsample of soil from each site was collected for final pH measurements from a randomly chosen replicate.

Weigh boats containing seedlings were weighed immediately after cutting using a Mettler AE 240 scale, in order to obtain wet weights, and were subsequently placed in a Thelco 28 oven to dry for 24 hours. Seedlings were weighed at the end of the drying period in order to obtain dry weights. The endpoints calculated were the number of seedling surviving and their biomass (evaluated on the basis of dry weight divided by final count). The test acceptance criterion for the negative control was seedling survival of ≥ 90 percent. Statistics were run using Biostat software on all sites where survival or growth were less than control, using a level of significance of 0.05.

A reference toxicant test (positive control) was conducted in conjunction with the lettuce seedling survival and biomass tests using boric acid as the toxicant. Test organisms were exposed to control, 40, 80, 160, 320 and 640 mg/kg boron for the same duration as the concurrent soil test, and the results of this test were compared with historical data for the species to determine whether the sensitivity of the organisms was appropriate.

2.3 Earthworm 14- day survival test methods

An earthworm survival test was conducted on samples received June 3, 2011 using the red wiggler worm, *Eisenia foetida*. The organisms were obtained from Aquatic Research Organisms, NH. Nautilus Environmental received the organisms at the laboratory on June 2, 2011 in good condition. Tests were initiated on June 9, 2011 according to procedures presented by WADOE (1996) and ASTM (1994). Test procedures are summarized in Table 3.

Table 3. Summary of testing conditions for the earthworm survival test.

Test start date	June 9, 2011
Test end date	June 23, 2011
Test organism	<i>Eisenia foetida</i>
Test organism source	Aquatic Research Organisms, Hampton, NH
Test organism age	>90 days
Test duration	14 days
Test chamber	1-L glass jar
Test soil/replicate	200 g dry weight
Water source for hydration	De-ionized water
Control soil	70% sand, 20% kaolin clay, 10% peat moss, 0.45% CaCO ₃
Number of organisms/replicate	10
Number of replicates/sample	3
Test temperature	22± 2°C
Illumination	Continuous lighting
Test acceptance criterion	≥90% mean survival of control organisms
Positive control reference toxicant	2-chloroacetamide

Twenty-four hours prior to testing, 25 g of soil was removed from each sample, the initial weight of soil and vessel was obtained, and samples were then placed in a Thelco 28 oven set to between 103 and 105°C to dry for 24 hours. After 24 hours, samples were removed from the oven, allowed to cool, and final weights were obtained to determine the moisture content of each sample. Samples with a moisture content of less than 35 percent were then hydrated to match control levels or control friability, as required. Moisture content upon receipt of the samples, as well as hydration requirements and amount of water added to samples is contained in Table 4.

On test initiation, pH and conductivity measurements were conducted on a slurry of de-ionized (DI) water and soil in a 1:1 ratio (i.e., 25 mL DI water:25 g soil). Soil slurry pH was measured after allowing soil/water mixture to stir for 5 minutes. Once the measurement was taken, the slurry was allowed to settle for 30 minutes, after which the pH of the supernatant liquid was

measured. Conductivity and pH measurements were conducted utilizing an Orion 130A and Orion 320 meter, respectively.

Sample soils were hydrated with DI water where necessary, and distributed into 1-L labeled glass jars prior to test initiation. Three replicates and a surrogate were used for each sample, each containing 200 g of soil. Moisture content was also determined at test initiation. Sample distribution took place according to a randomization sheet created in Excel. Organisms, greater than 90 days old, were added following sample distribution, once samples were confirmed to be within acceptable temperature range. Jars were placed in an environmental chamber at $22 \pm 2^{\circ}\text{C}$ under continuous light conditions.

Test temperatures were measured daily from surrogate test chambers. Test chambers were misted daily with DI water in order to maintain proper moisture levels.

Table 4. Pre-test hydration used for visual match of control friability.

Client ID	Nautilus Log-In	Initial Moisture Content (%)	Hydration Needed (%)	Amount of Water Added to Sample (ml)
SHSB2-3:18	S11-061	7.3	27.7	166
WSSB6-0910	S11-055	7.3	27.7	166
ELSS-0810	S11-057	8.7	26.3	158
STARROAD 1807	S11-059	12.1	22.9	137
SH4-W64	S11-062	14.2	20.8	125
WS11-AM24	S11-051	30.1	4.1	24.7
YFSS-D1	S11-053	7.3	27.7	166

The tests were terminated on day 14, June 23, 2011. At test termination, prior to counting, observations were made of each test chamber, including dead organisms on the surface or any behavior abnormalities. To count test organisms, sample replicates were transferred to a flat surface lined with moistened paper towels, animals were counted, and any behavior (e.g., lack of burrowing, coiling, "balling" together), or morphological changes (e.g., contraction, rigidity, ulceration of the integument, segmental constriction, segmental loss) were noted. The surrogate chamber was used to determine final moisture content, and final pH and conductivity measurements.

The endpoint calculated was earthworm survival. The test acceptance criterion for the negative control was earthworm survival of ≥ 90 percent. Statistics were run using Biostat software on all sites where survival were less than control, using a level of significance of 0.05.

A reference toxicant test (positive control) was conducted in conjunction with the earthworm survival tests using 2-chloroacetamide. Test organisms were exposed to control, 10, 20, 40, and 80 mg/kg 2-chloroacetamide for the same duration as the concurrent soil tests, and the results of this test were compared with historical data for the species to determine whether the sensitivity of the organisms was appropriate.

2.4 Earthworm 28- day bioaccumulation test methods

Methods for the 28-day tests with earthworms followed the same methods as the 14-day for test initiation and daily monitoring, as outlined in Section 2.3. The test was terminated on July 7, 2011 following the same procedures. Worms were then separated from the soil and were stored in clean glass jars overnight to allow for depuration. The day following termination, worms were placed in chemistry containers by site and sent to an analytical chemical laboratory for analysis. There were no statistical endpoints calculated for this test. The chemistry data is reported here and will be used by Environmental Partners to calculate a bioaccumulation factor.

3.0 RESULTS

Results of toxicity tests conducted using butter crunch lettuce starting June 7, 2011 are summarized in Tables 5 and 6. Results of toxicity tests conducted using *E. foetida* starting June 9, 2011 are summarized in Tables 7 and 8. Detailed results of the soil toxicity tests and statistical analyses are provided in Appendix A. Copies of the laboratory bench sheets, reference toxicant test results, and chain-of-custody forms are in Appendices B, C, and D.

3.1 Lettuce toxicity results

Mean survival was 91.7 percent for the artificial soil control. The mean survival in the test soils ranged from 78.3 to 91.7 percent. None of the sites exhibited significant toxic effects when compared to negative control survival results.

Mean biomass was 1.18 mg per seedling for the artificial soil control. Mean biomass in the test soils ranged from 1.00 to 2.27 mg per seedling. None of the sites were significantly different than the negative control for growth.

Table 5. Results (means \pm standard deviations) for *L. sativa* survival

Site ID/ Nautilus Log-In Number	% Survival	Mean Survival (%)	% of Control	Significant Decrease from Control? (p<0.05)
Negative Control	91.7	91.7 \pm 10.2	--	--
	75.0			
	91.7			
	100			
	100			
SHSB2-3:18 S11-061	91.7	91.7 \pm 5.9	100	No
	91.7			
	100			
	91.7			
	83.3			
WSSB6-0910 S11-055	100	85.0 \pm 16.0	92.7	No
	91.7			
	91.7			
	83.3			
	58.3			
ELSS-0810 SS11-057	58.3	78.3 \pm 19.2	85.4	No
	91.7			
	83.3			
	100			
	58.3			
STARROAD 1807 S11-059	100	91.7 \pm 5.9	100	No
	83.3			
	91.7			
	91.7			
	91.7			
SH4-W64 S11-062	75.0	91.7 \pm 10.2	100	No
	100			
	91.7			
	91.7			
	100			
WS11-AM24 S11-051	91.7	85.0 \pm 10.9	92.7	No
	91.7			
	91.7			
	83.3			
	66.7			
YFSS-D1 S11-053	100	86.7 \pm 17.3	94.5	No
	100			
	58.3			
	91.7			
	83.3			

Table 6. Results (means \pm standard deviations) for *L. sativa* growth

Site ID/Nautilus Log-In Number	Growth per Seedling (mg)	Mean Growth per Organism (mg)	% of Control	Significant Decrease from Control? (p<0.05)
Negative Control	1.56	1.18 \pm 0.38	--	--
	1.39			
	0.62			
	1.34			
	0.99			
SHSB2-3:18 S11-061	1.34	1.41 \pm 0.40	119	No
	1.67			
	1.74			
	0.75			
	1.56			
WSSB6-0910 S11-055	1.11	1.49 \pm 0.40	126	No
	1.17			
	1.58			
	2.12			
	1.45			
ELSS-0810 SS11-057	0.98	1.01 \pm 0.18	85.6	No
	0.94			
	1.27			
	1.07			
	0.77			
STARROAD 1807 S11-059	2.30	2.27 \pm 0.34	192	No
	1.77			
	2.31			
	2.24			
	2.72			
SH4-W64 S11-062	1.23	1.74 \pm 0.38	147	No
	1.71			
	1.57			
	1.93			
	2.26			
WS11-AM24 S11-051	1.22	1.23 \pm 0.44	104	No
	2.00			
	0.90			
	1.00			
	1.05			
YFSS-D1 S11-053	0.56	1.00 \pm 0.31	84.7	No
	1.00			
	0.87			
	1.38			
	1.20			

3.2 Earthworm 14-day toxicity results

Mean survival was 100 percent for the artificial soil control as well as the test sites, SHSB2-3:18 and WSSB6-0910, and STARROAD 1807. Site ELSS-0810 had 96.7 percent survival. None of the test sites were significantly different from the control.

Table 7. Results (means ± standard deviations) for *E. foetida* survival

Site ID/Nautilus Log-In Number	Survival (%)	Mean Survival (%)	% of Control	Significant Decrease from Control? (p<0.05)
Negative Control	100	100 ± 0.0	--	--
	100			
	100			
SHSB2-3:18 S11-061	100	100 ± 0.0	100	No
	100			
	100			
WSSB6-0910 S11-055	100	100 ± 0.0	100	No
	100			
	100			
ELSS-0810 SS11-057	100	96.7 ± 5.8	96.7	No
	90.0			
	100			
STARROAD 1807 S11-059	100	100 ± 0.0	100	No
	100			
	100			

3.3 Earthworm 28-day bioaccumulation results

Control arsenic concentrations were determined to be 3.6 mg/kg at test termination. Site concentrations ranged from 4.1 to 7.8 mg/kg.

Table 8. Analytical chemistry results after 28-days for *E. foetida*

Site ID/Nautilus Log-In Number	Arsenic Concentration (mg/kg)
Negative Control	3.6
SH4-W64 S11-062	7.8
WS11-AM24 S11-051	4.1
YFSS-D1 S11-053	7.4

3.4 Soil Chemistries

Soil chemistry data are provided in Appendix B. Lettuce test sample pH from test initiation and termination are provided in Tables 9, while pH, conductivity, and percent moisture data for the 14-day earthworm are contained in Table 10. A summary of physical and chemical characteristics measured during testing is provided in Tables 11 through 13.

For the lettuce test temperatures ranged between 21.5 and 28.0°C for the duration of the test. The temperature in the 14-day earthworm test ranged from 21.9-22.0 °C, while the 28-day test ranged from 21.3-22.0 °C for the duration of the tests.

Table 9. Initial and final pH values for 14-day lettuce tests

Sample ID	Nautilus Log-In Number	Soil Slurry pH		Soil Supernatant pH	
		Initial	Final	Initial	Final
SHSB2-3:18	S11-061	5.14	5.66	5.94	5.69
WSSB6-0910	S11-055	7.41	7.73	7.51	7.80
ELSS-0810	S11-057	6.85	7.34	7.28	7.67
STARROAD 1807	S11-059	7.50	8.10	7.52	8.13
SH4-W64	S11-062	7.05	7.58	7.50	7.55
WS11-AM24	S11-051	7.50	7.94	7.51	8.00
YFSS-D1	S11-053	7.51	7.93	7.52	7.93

Table 10. Initial and final soil chemistry values for the *E. foetida* tests

Sample ID	Nautilus Log-In Number	% Moisture		Soil Slurry pH		Soil Slurry Conductivity (µS/cm)	
		Initial	Final	Initial	Final	Initial	Final
14-day Tests							
Negative Control		51.5	38.1	7.63	7.69	285	473
SHSB2-3:18	S11-061	10.1	19.1	8.09	7.59	71	370
WSSB6-0910	S11-055	5.5	16.8	8.10	6.66	17	219
ELSS-0810	S11-057	5.5	22.0	8.28	7.55	30	335
STARROAD 1807	S11-059	14.2	28.9	7.68	6.76	46	603
28-day Tests							
Negative Control		46.2	50.6	7.54	7.08	529	607
SH4-W64	S11-062	7.76	13.1	8.23	7.50	84	43
WS11-AM24	S11-051	38.9	51.5	6.54	5.54	16	15
YFSS-D1	S11-053	9.17	14.2	7.00	6.80	34	120

Table 11. Summary of Chemical/Physical Characteristics measured during *L. sativa* testing

Parameter	Criteria	Count	Minimum	Maximum	Average	Acceptable?
Initial pH (Slurry)	>5.0	7	5.14	7.51	6.99	Yes
Initial pH (Supernatant)	>5.0	7	5.94	7.52	7.25	Yes
Temperature (°C)	20-30	15	21.4	28.0	25.1	Yes
Light Reading (Lux)	>1000	3	2146	2262	2203	Yes

Table 12. Summary of Chemical/Physical Characteristics measured during the 14-day *E. foetida* testing

Parameter	Criteria	Count	Minimum	Maximum	Average	Acceptable? Samples affected
Initial Moisture Fraction (%)	35-45	5	5.49	51.5	17.3	No ¹ All three sites
Initial Slurry pH	>5.0	5	7.63	8.28	7.96	Yes
Initial Slurry Conductivity (µS/cm)	--	5	17	285	90.0	Yes
Temperature (°C)	22±2	15	21.9	22.0	22.0	Yes

¹Deviation from protocol not expected to influence results of the test, see QA/QC for discussion

Table 13. Summary of Chemical/Physical Characteristics measured during the 28-day *E. foetida* testing

Parameter	Criteria	Count	Minimum	Maximum	Average	Acceptable? Samples affected
Initial Moisture Fraction (%)	35-45	4	7.76	51.5	26.8	No ¹ SH4-W64, YFSS-D1
Initial Slurry pH	>5.0	4	6.54	8.23	7.33	Yes
Initial Slurry Conductivity (µS/cm)	--	4	16	529	166	Yes
Temperature (°C)	22±2	29	21.3	22	21.9	Yes

¹Deviation from protocol not expected to influence results of the test, see QA/QC for discussion

4.0 QA/QC

In both the 14- and 28-day earthworm tests, due to the nature of some of the soils, (consisting mostly of rocks and little to no organic matter that could hold moisture), all samples except WS11-AM24 were hydrated to 35 percent moisture content based on calculations. However, the measured percent moisture was significantly less than 35 percent. All samples took on the same appearance and friability as the control soil and the low moisture content is not thought to have affected the results.

All three tests met the acceptability criterion for negative control performance. Temperature readings remained within parameters for the duration of the test.

Results of reference toxicant test (positive control) conducted with the test organisms are provided in Table 14. The EC50 values fell within the acceptable range of mean \pm two standard deviations for historical data, indicating that the test organisms appeared to have been of an appropriate degree of sensitivity.

Table 14. Reference toxicant test results.

Species	Endpoint	Date Initiated	EC50	Historical range (mean \pm 2 SD)	Coefficient of Variation (%)
<i>Lactuca sativa</i>	Survival	6/7/2011	174 mg/kg B	106 - 377	28.1
	Biomass	6/7/2011	123 mg/kg B	96.6 - 194	16.8
<i>Eisenia foetida</i>	Survival	6/9/2011	35.8 mg/kg 2-Chloroacetamide	7.0 - 80.9	42.0

5.0 REFERENCES

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APPENDIX A - Summary of Results and Statistics

**Appendix Table A-1: *Lactuca sativa* 14-day Survival and Growth
Northwest Pipeline GP TEE Program
Test Initiated June 7, 2011**

Concentration	Rep	Survival				Growth					
		# Alive	% Survival	Mean % Survival	St. Dev.	Tare Weight (g)	Total Dry Weight (g)	Total Seeding Weight (mg)	Growth per Seeding (mg)	Mean Growth per Org (mg)	St. Dev.
Laboratory Control	1	11	91.7			1.63560	1.65274	17.14	1.56		
	2	9	75.0			1.35860	1.37110	12.50	1.39		
	3	11	91.7	91.7	10.2	1.42428	1.43108	6.80	0.62	1.18	0.38
	4	12	100.0			1.53960	1.55564	16.04	1.34		
	5	12	100.0			1.54137	1.55324	11.87	0.99		
SHSB2-3:18 S11-061	1	11	91.7			1.73975	1.75454	14.79	1.34		
	2	11	91.7			1.76037	1.77874	18.37	1.67		
	3	12	100.0	91.7	5.9	1.66022	1.68107	20.85	1.74	1.41	0.40
	4	11	91.7			1.50294	1.51123	8.29	0.75		
	5	10	83.3			1.49273	1.50835	15.62	1.56		
WSSB6-0910 S11-055	1	12	100.0			1.50121	1.51454	13.33	1.11		
	2	11	91.7			1.49888	1.51179	12.91	1.17		
	3	11	91.7	85.0	16.0	1.51305	1.53038	17.33	1.58	1.49	0.40
	4	10	83.3			1.48985	1.51108	21.23	2.12		
	5	7	58.3			1.48325	1.49343	10.18	1.45		
ELSS-0810 S11-057	1	7	58.3			1.66060	1.66749	6.89	0.98		
	2	11	91.7			1.67227	1.68264	10.37	0.94		
	3	10	83.3	78.3	19.2	1.70786	1.72053	12.67	1.27	1.01	0.18
	4	12	100.0			1.59567	1.60853	12.86	1.07		
	5	7	58.3			1.44806	1.45345	5.39	0.77		
STARROAD 1807 S11-059	1	12	100.0			1.54378	1.57139	27.61	2.30		
	2	10	83.3			1.52690	1.54464	17.74	1.77		
	3	11	91.7	91.7	5.9	1.62073	1.64619	25.46	2.31	2.27	0.34
	4	11	91.7			1.69490	1.71952	24.62	2.24		
	5	11	91.7			1.48753	1.51747	29.94	2.72		
SH4-W64 S11-062	1	9	75.0			1.52711	1.53821	11.10	1.23		
	2	12	100.0			1.49895	1.51949	20.54	1.71		
	3	11	91.7	91.7	10.2	1.34947	1.36679	17.32	1.57	1.74	0.38
	4	11	91.7			1.33579	1.35705	21.26	1.93		
	5	12	100.0			1.44537	1.47247	27.10	2.26		
WST11-AM24 S11-051	1	11	91.7			1.39530	1.40868	13.38	1.22		
	2	11	91.7			1.75900	1.78095	21.95	2.00		
	3	11	91.7	85.0	10.9	1.75735	1.76722	9.87	0.90	1.23	0.44
	4	10	83.3			1.46752	1.47747	9.95	1.00		
	5	8	66.7			1.62414	1.63251	8.37	1.05		
YFSS-D1 S11-053	1	12	100.0			1.66880	1.67552	6.72	0.56		
	2	12	100.0			1.47496	1.48692	11.96	1.00		
	3	7	58.3	86.7	17.3	1.51489	1.52101	6.12	0.87	1.00	0.31
	4	11	91.7			1.53656	1.55174	15.18	1.38		
	5	10	83.3			1.57413	1.58613	12.00	1.20		

**Appendix Table A-21. *Eisenia fetida* 14-Day Survival
Northwest Pipeline GP TEE Program
Test Initiated June 9, 2011**

Site	Rep	# Alive	% Survival	Mean % Survival	St. Dev.
Laboratory Control	1	10	100	100.0	0.0
	2	10	100		
	3	10	100		
SHSB2-3:18 S11-061	1	10	100	100.0	0.0
	2	10	100		
	3	10	100		
WSSB6-0910 S11-055	1	10	100	100.0	0.0
	2	10	100		
	3	10	100		
ELSS-0810 S11-057	1	10	100	96.7	5.8
	2	9	90		
	3	10	100		
STARROAD 1807 S11-059	1	10	100	100.0	0.0
	2	10	100		
	3	10	100		

APPENDIX B - Laboratory Datasheets

14-Day Soil Toxicity Test **Soil Quality Measurements**

Client: Environmental Partners, Inc. Start Date/Time: 6/7/11 1430
 Species: Lactuca sativa (butter crunch lettuce) End Date/Time: 6/24/11 1300

Sample IDs: SMS2-318, WS-86-090, ELS-080, SHERWOOD RD, S4-W-01, WS11-AM124, YFS-01

Test #s: 1100 - T006, T007, T008, T010, T011, T012

Nautilus Log-In #s: S11-001, S11-005, S11-053, S11-059, S11-062, S11-051, S11-053

Test Day	Temperature (°C)	Plants Watered (AM/PM)	Light Intensity (lux)	Tech Initials
0	21.5	-/0	2202	
1	25.0	0/0		
2	26.0	F/F		F
3	29.0	F/F		F
4	23.8	F/F		F
5	24.0	F/F		F
6	27.0	0/0		
7	28.0	F/F	2146	F
8	24.0	0/0		
9	25.5	0/0		
10	24.8	F/F		F
11	26.0	0/0		
12	26.0	0/0		
13	23.5	F/F		F
14	28.0	0/0	2200	F

Conc. or Sample ID	Soil Slurry pH (units)		Soil Supernatant pH (units)	
	initial	final	initial	final
S11-051	5.14	5.10	5.99	5.10
S11-053	7.41	7.73	7.51	7.80
S11-055	6.85	7.34	7.28	7.67
S11-057	7.50	8.10	7.52	8.13
S11-059	7.55	7.58	7.50	7.55
S11-062	7.50	7.94	7.51	8.00
S11-062	7.51	7.93	7.52	7.93
Tech Initials	F	F	F	F

Comments: _____
 Test Chamber: Room A
 Organism Source: Territorial Seed Company
 QC Check: (initials)

Soil Toxicity Test

Letuce Seed Daily Germination Counts

Client: **EP1**

Tray#: **1**

Species: *Lucania sodalis*

Start Date/Time: **6/7/11 1430**

End Date/Time: **6/21/11 1300**

Test #s: **1106 - Toxicity TRV TD12**

Day 3	Row	1	2	3	4	5	6
Day 3	A	9	9	11	11	8	3
	B	7	10	11	10	9	2
	C	11	8	11	9	3	11
	D	8	11	3	10	12	2
	E	10	2	11	5	1	10
	F	3	11	11	2	12	4

Analyst: **AF**

Day 7	Row	1	2	3	4	5	6
Day 7	A	9	10	12	11	8	7
	B	7	11	11	11	11	12
	C	11	10	11	11	7	11
	D	12	11	12	10	12	12
	E	11	10	11	7	7	12
	F	10	11	11	8	11	12

Analyst: **AF**

Day 11	Row	1	2	3	4	5	6
Day 11	A	9	10	12	11	8	10
	B	7	11	11	11	11	12
	C	11	10	12	10	7	11
	D	12	11	12	10	12	12
	E	11	10	11	7	7	12
	F	10	11	11	8	12	12

Analyst: **QC**

Day 4	Row	1	2	3	4	5	6
Day 4	A	9	9	12	11	8	4
	B	7	11	11	10	10	5
	C	11	9	11	11	4	11
	D	11	11	8	10	12	5
	E	11	4	11	5	2	12
	F	10	11	11	3	12	6

Analyst: **AF**

Day 8	Row	1	2	3	4	5	6
Day 8	A	9	10	12	11	8	10
	B	7	11	11	11	11	12
	C	11	10	12	11	7	11
	D	12	11	12	10	12	12
	E	11	11	11	7	8	12
	F	11	11	11	8	12	12

Analyst: **BP**

Day 12	Row	1	2	3	4	5	6
Day 12	A	9	10	12	11	8	10
	B	7	11	11	11	11	12
	C	11	10	12	10	7	11
	D	12	11	12	10	12	12
	E	11	10	11	7	7	12
	F	10	11	11	8	12	12

Analyst: **BP**

Day 5	Row	1	2	3	4	5	6
Day 5	A	9	10	12	11	8	6
	B	7	11	11	11	10	9
	C	11	10	11	11	6	11
	D	12	11	9	10	12	11
	E	11	8	11	6	6	10
	F	10	11	11	5	11	10

Analyst: **AF**

Day 9	Row	1	2	3	4	5	6
Day 9	A	9	10	12	11	8	10
	B	7	11	11	11	11	12
	C	11	10	12	11	7	11
	D	12	11	12	10	12	12
	E	11	11	11	7	9	12
	F	11	11	11	8	12	12

Analyst: **BP**

Day 13	Row	1	2	3	4	5	6
Day 13	A	9	10	12	11	8	10
	B	7	11	11	11	11	12
	C	11	10	12	10	7	11
	D	12	11	12	10	12	12
	E	11	11	11	7	7	12
	F	11	11	11	9	12	12

Analyst: **BP**

Day 6	Row	1	2	3	4	5	6
Day 6	A	9	10	12	11	8	7
	B	7	11	11	11	11	12
	C	11	10	11	11	7	11
	D	12	11	12	10	12	12
	E	11	10	11	8	11	12
	F	10	11	11	11	11	12

Analyst: **AF**

Day 10	Row	1	2	3	4	5	6
Day 10	A	9	10	12	11	8	10
	B	7	11	11	11	11	12
	C	11	10	12	11	7	11
	D	12	11	12	10	12	12
	E	11	11	11	7	9	12
	F	11	11	11	8	12	12

Analyst: **AF**

Day 14**	Row	1	2	3	4	5	6
Day 14**	A	9N	10N	12N	11N	8N	10N
	B	7N	11N	11N	11N	11N	12N
	C	11N	10N	12N	11N	7N	11N
	D	12N	11N	12N	10N	12N	12N
	E	11N	11N	11N	7N	7N	12N
	F	11N	11N	11N	9N	12N	12N

Analyst: **BP**

Comments:

QC Check: **YW**

** Day 14: Include sublethal observations:

N= Normal D= Decarction M= Mortling
W= Wilting C= Chlorosis X= No germination

Soil Toxicity Test

Letuce Seed Daily Germination Counts

Client: EP1

Trays: 2

Species: Lactuca sativa

Start Date/Time: 6/7/11 1430

Test #: 1106-TR06-TRAY-TO12

End Date/Time: 6/21/11 1300

Day 3	Row	Column					
		1	2	3	4	5	6
	A	5					
	B	12					
	C	10					
	D	10					
	E	8					
	F	SWP					
	Analyst	MF					

Day 7	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	9					
	D	10					
	E	10					
	F	SWP					
	Analyst	MF					

Day 11	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	9					
	D	11					
	E	10					
	F	SWP					
	Analyst	MF					

Day 4	Row	Column					
		1	2	3	4	5	6
	A	7					
	B	12					
	C	10					
	D	SWP					
	E	8					
	F	SWP					
	Analyst	MF					

Day 8	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	9					
	D	11					
	E	10					
	F	SWP					
	Analyst	BP					

Day 12	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	9					
	D	11					
	E	10					
	F	SWP					
	Analyst	BP					

Day 5	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	10					
	D	10					
	E	10					
	F	SWP					
	Analyst	MF					

Day 9	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	9					
	D	11					
	E	10					
	F	SWP					
	Analyst	BP					

Day 13	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	10					
	D	11					
	E	10					
	F	SWP					
	Analyst	BP					

Day 6	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	10					
	D	11					
	E	10					
	F	SWP					
	Analyst	MF					

Day 10	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	9					
	D	11					
	E	10					
	F	SWP					
	Analyst	BP					

Day 14 ^{***}	Row	Column					
		1	2	3	4	5	6
	A	11					
	B	12					
	C	10					
	D	11					
	E	10					
	F	SWP					
	Analyst	BP					

Comments:

QC Check:

QC Check: MF

*** Day 14: Include sublethal observations:

N= Normal D= Desiccation M= Mottling
W= Wilting C= Chlorosis A= No germination

Client: Environmental Partners Start Date & Time: 6/7/11 1430
 Species: Lactuca sativa Stop Date & Time: 6/21/11 1300
 Test #'s: 1100 - T006, T007, T008, T009, T010, T011, T012

Sample ID	Cont.	Rep.	No. Seedlings Emerged	Shoot Pan Tare Wt. (g)	Pan + Wet Shoot Wt. (g)	Pan + Dry Shoot Wt. (g)
CON	310	1	11	1.63510	2.09482	1.65274
	241	2	9	1.35360	1.601073	1.54464
* ②	11	3	11	1.42428	1.61014	1.43108
	34	4	12	1.53160	1.76700	1.55564
	32	5	12	1.54137	1.72831	1.55324
SII-061	12	1	11	1.73975	2.12169	1.75454
	21	2	11	1.71037	2.04951	1.77874
* ⑤	13	3	12	1.66022	2.00733	1.66158
	5	4	11	1.70294	1.78289	1.51123
	38	5	10	1.49273	1.84167	1.50833
SII-055	30	1	12	1.50121	1.74063	1.51454
	39	2	11	1.49888	1.72253	1.51179
* ③	17	3	11	1.51305	1.83395	1.53038
	22	4	10	1.48985	1.63040	1.51108
	2	5	7	1.48325	1.61396	1.49343
SII-057	29	1	7	1.66060	1.66124	1.66749
	12	2	7	1.67277	1.70254	1.68264
* ③	31	3	0	1.70780	1.75783	1.72053
	35	4	12	1.59567	1.63925	1.60853
	27	5	7	1.44806	1.47273	1.45345
SII-059	28	1	12	1.54378	2.10610	1.57137
	9	2	10	1.52690	1.98016	1.54464
* ②	14	3	11	1.62078	2.16859	1.64619
	10	4	11	1.67490	2.15932	1.71953
	33	5	11	1.48753	2.01868	1.51747
SII-062	1	1	9	1.52711	1.75354	1.53821
	37	2	12	1.49895	1.88872	1.51949
* ②	18	3	11	1.34947	1.62471	1.36679
	8	4	11	1.33579	1.60703	1.35705
	15	5	12	1.44537	1.70581	1.47247
SII-051	20	1	11	1.39530	1.95903	1.40868
	3	2	11	1.75900	1.97621	1.78095
* ①	19	3	11	1.75735	2.04110	1.76722
	7	4	0	1.46752	1.61624	1.47747
	25	5	3	1.62414	1.74693	1.63251
SII-053	16	1	12	1.66880	1.72670	1.67552
	4	2	12	1.47496	1.57018	1.48692
* ③	23	3	7	1.51489	1.56167	1.52101
	20	4	11	1.53598	1.64056	1.55174
	40	5	10	1.57413	1.69237	1.58613
		1				
		2				
		3				
		4				
		5				
Tech Initials:			(M)	(M)	(M)	84

Comments: Initial number of seeds added to each replicate = 12
 Date/Time in: 6/21/11 1500 Oven Temp (°C): 67.0
 Date/Time out: 6/23/11 1530 Oven Temp (°C): 72.0

QC: (M)

* Samples rated 0-5 from least rocky (0) to most rocky (5).

Environmental Quality Results - 14-Day Soil
Nautilus Environmental

Client: Environmental Partners Start Date/Time: 6/19/11 14:00 End Date/Time: 6/22/11 13:00
 Sample IDs: S11-052-316, WSS Bg - 01106 - 1029 to T032 Test Species: Escherichia coli
ESS-0510, STARDAG 1801

Test Day	Temp (°C)	Tech Init.
0	22.0	DS
1	22.0	AF
2	21.9	AF
3	21.9	AF
4	21.9	AF
5	21.9	AF
6	22.0	DS
7	22.0	BP
8	22.0	BT
9	22.0	CC
10	22.0	CP
11	22.1	CP
12	21.9	BT
13	22.0	DS
14	22.0	DS

Sample ID	Rep. #	Cont. #	% Moisture		pH (units)		Conductivity (uhom-cm)		Survival		Sublethal Observations	
			initial	final	initial	final	initial	final	initial	final	Day 7	Day 14
CON	1	10	55.4	38.12	7.03	7.09	255	473	10	10	N	N
	2	13	51.5						10	10		
	3	4							10	10		
S11-061	1	12	10.1	19.1	8.09	7.59	71	370	10	10		
	2	2							10	10		
	3	8							10	10		
S11-055	1	14	5.49	16.8	8.10	6.66	17	219	10	10		
	2	11							10	10		
	3	6							10	10		
S11-057	1	5	5.49	22.0	6.78	7.55	30	335	10	10		
	2	15							10	10		
	3	1							10	10		
S11-059	1	7	14.16	25.9	7.08	6.76	46	603	10	10		
	2	3							10	10		
	3	9							10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	1								10	10		
	2								10	10		
	3								10	10		
	Tech initials											

Sublethal Observations Key:

- N = Normal/burrowed
- E = Exposed/on surface
- B = Balled together
- D = Dead
- W = Segmental swelling
- L = Lesions/ulcers
- C = Coiling
- S = Shortening/stiffening

Test Chamber: ENV. P.M.A.
 Organism source: ARO
 QA Review: CC

Nautilus Environmental
 Washington Laboratory
 5009 Pacific Hwy. E., Suite 2
 Tacoma, WA 98424

Raw Data Sheet
 Soil Data
 14-Day Soil Toxicity Test

Client: Environmental Partners Inc. Test #: 11010-T029 + T032
 Sample IDs: S11-061, 3:18, WSS86-0910, ELSS-0810, Log-In#: S11-061, 055, 057, 059
 Date: 6/19/11 1400 STRIPPAD 1807 Species: E. foetida

Soil Weights and Moisture Fraction (MF):

Site	Pre-Test			Day 0			Day 14/28		
	Initial (wet)	Final (dry)	MF	Initial (wet)	Final (dry)	MF	Initial (wet)	Final (dry)	MF
S11-061	26.4	24.7	7.3	75.7	75.4	10.1	158.0	154.0	19.1
S11-055	26.6	24.9	7.3	78.9	77.6	5.49	110.2	113.2	11.8
S11-057	26.1	24.5	8.7	77.8	76.5	5.49	92.9	88.4	22.0
S11-059	26.4	23.7	12.1	78.4	75.3	14.16	140.5	134.9	28.9
14 day con				275.4	66.9	51.5	124.7	117.8	38.12
S11-062	26.4	24.3	14.2	102.0	100.2	7.76	124.5	121.9	13.1
S11-051	26.4	20.9	30.9	73.1	86.1	38.9	139.2	130.7	24.5
S11-053	26.4	24.7	7.3	105.4	103.3	7.17	142.0	141.9	14.2
28 day con				105.5	97.6	46.2	105.7	97.3	50.10
RT 80 mg/kg				92.6	84.3	49.7	128.4	118.2	66.9
" 40 mg/kg				70.8	62.7	47.9	105.4	96.3	51.2
" 20 mg/kg				73.1	70.2	46.2	78.5	67.10	77.3
" 10 mg/kg				82.10	74.6	47.1	143.2	135.0	48.6
" con				102.1	94.2	46.2	145.8	136.9	55.3
Tech Initials:	DS	DS	DS	DS	CF	MF	MD	DS	DS

28 day

138.9

66.9

Date/Time in/Temp: 6/7/11 1400 103° 6/9/11 1330 101 6/22/11/14/10/11 916°
 Date/Time out/Temp: 6/8/11 1400 104° 5/10/11 1330 109 6/28/11/8/30/11 100703°

MF = (I-F)/(A-(I-F))*100
 MF = Moisture fraction of bulk soil (in %)
 I = Initial wet weight of sample + pan (g)
 F = Final dry weight of sample + pan (g)
 A = Initial aliquot weight (g)

* due to rocky texture of samples, matched % moisture on friability instead of volume

Environmental Quality Results - 28-Day Soil Bioassay

Nautilus Environmental

Client: Environmental Partners
 Sample ID: SH4-W/4 Y FSS-DL WS11-A131 (BKG)
 Test #: 1106-T033 1106-T034 1106-T035
 Nautilus Check-In #: S11-002, S11-051, S11-053

Start Date/Time: 6/9/11 1415
 End Date/Time: 7/7/11 1500
 Test Species: Elisena foetida

Test Day	Temp (°C)	Tech Initials
0	22.0	JJ
1	22.0	MF
2	21.9	MF
3	21.9	MF
4	21.9	(M)
5	21.9	Et
6	22.0	JJ
7	21.8	BP
8	22.0	Et
9	22.0	CC
10	22.0	(M)
11	21.9	BP
12	21.9	Et
13	22.0	JJ
14	21.9	JJ
15	22.0	MF
16	22.0	Et
17	22.0	(M)
18	22.0	MF
19	22.0	(M)
20	21.9	BP
21	21.3	JJ
22	22.0	JJ
23	21.8	Et
24	22.0	BP
25	22.0	(M)
26	22.0	BP
27	22.0	MF
28	22.0	JJ

Site	% Moisture		pH (units)		Conductivity (uS/cm)	
	Day 0	Day 28	Day 0	Day 28	Day 0	Day 28
LOW	51.5	50.6	7.54	7.08	529	607
S11-002	7.76	13.1	8.23	7.50	84	43
S11-051	38.9	51.5	6.54	5.54	16	15
S11-053	9.17	14.2	7.00	6.80	34	120
Tech Initials	JJ	JJ				

QA Review/Date: (M) / 9/1/11
 Test Chamber: Env. Em. A

Nautilus Environmental
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 Tacoma, WA 98424

Eisenia fetida 28-Day Bioassay

Client/Project ID: Environmental Partners
 Test No.: 11070-T033, 11070-T034, 11070-T035

Start Date/Time: 6/9/11 1415
 End Date/Time: 7/7/11 1500

Sample ID	Cont. #	Rep. #	Initial Org. wt. (gm)	Initial No. Worms	Initial Avg. per Organism (gm)	Final Org. wt. (gm)	Final No. Worms	Initial Avg. per Organism (gm)	
W01	6	1	4.49024	10		3.42983	10		
		2	4.34917	10		2.74904	10		
		3	4.42805	10		2.75244	10		
		4							
		5							
S11-062	7	1	4.26906	10		2.53335	10		
		2	3.39532	10		6.05009	10		
		3	4.15407	10		2.0551	9		
		4							
		5							
S11-051	8	1	3.87916	10		1.86036	10		
		2	4.01945	10		2.10131	10		
		3	4.44998	10		2.51074	10		
		4							
		5							
S11-053	3	1	3.88745	10		2.50088	10		
		2	4.08257	10		4.43401	10		
		3	3.98070	10		2.55261	10		
		4							
		5							
		1							
		2							
		3							
		4							
		5							
		1							
		2							
		3							
		4							
		5							
		1							
		2							
		3							
		4							
		5							
Tech Initials									

QA (initials)

28-Day Soil Survival Results Nautilus Environmental

Client: Environmental Partners
 Test No.: 11016-T033 to T035
 Test Date: 6/9/11
 Test Organism: *Eisenia foetida*

Sample ID	Container #	Rep. #	Initial Number	Final Number	Sublethal Observations	Tech Initials
CON	6	1	10	10	N	[Initials]
	10	2	10	10	N	
	1	3	10	10	N	
		4				
		5				
S11-062	7	1	10	10	N	[Initials]
	5	2	10	10	N	
	4	3	10	9	N	
		4				
		5				
S11-051	8	1	10	10	N	[Initials]
	12	2	10	10	N	
	9	3	10	10	N	
		4				
		5				
S11-053	3	1	10	10	N	[Initials]
	11	2	10	10	N	
	2	3	10	10	N	
		4				
		5				
		1				
		2				
		3				
		4				
		5				
		1				
		2				
		3				
		4				
		5				

Washington Laboratory - 5009 Pacific Hwy. E. Suite 2, Tacoma, WA 98424

QA Check: (N)

Comments: _____

Sublethal Observations Key:

- N= Normal/harried
- E= Exposed on surface
- B= Balled together
- D= Dead
- W= Segmental swelling
- L= Lesions/ulcers
- C= Coiling
- S= Shortening/stiffening

APPENDIX C - Reference Toxicant Test Results

Early Seedling Growth

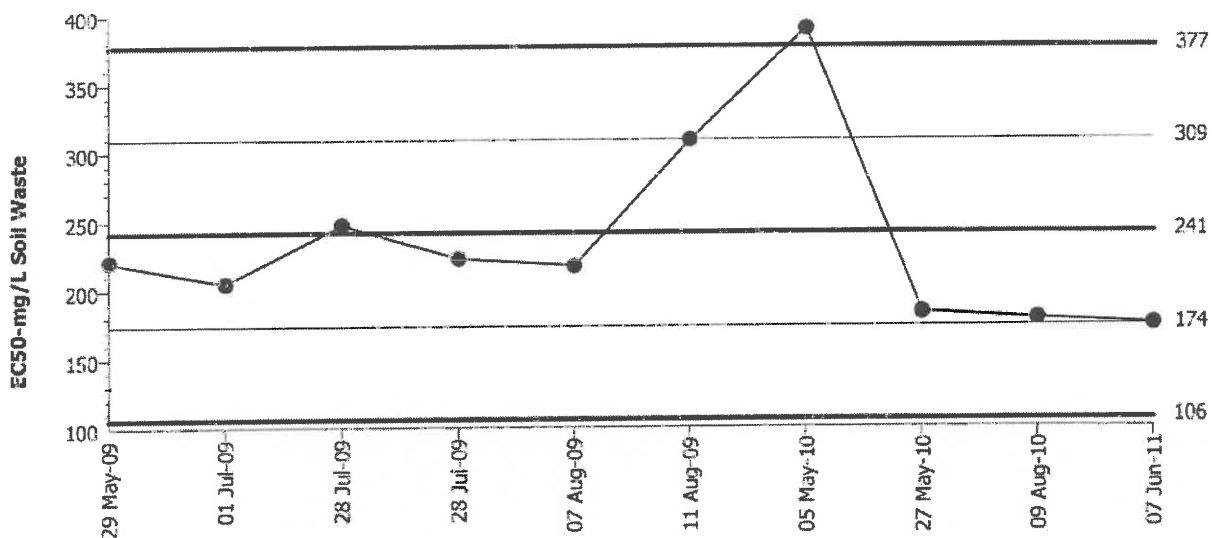
Nautilus Environmental WA

Test Type: Survival-Growth
Protocol: WDOE 96-324

Organism: Lactuca sativa (Lettuce)
Endpoint: Survival Rate

Material: Soil Waste
Source: Reference Toxicant-REF

Early Seedling Growth



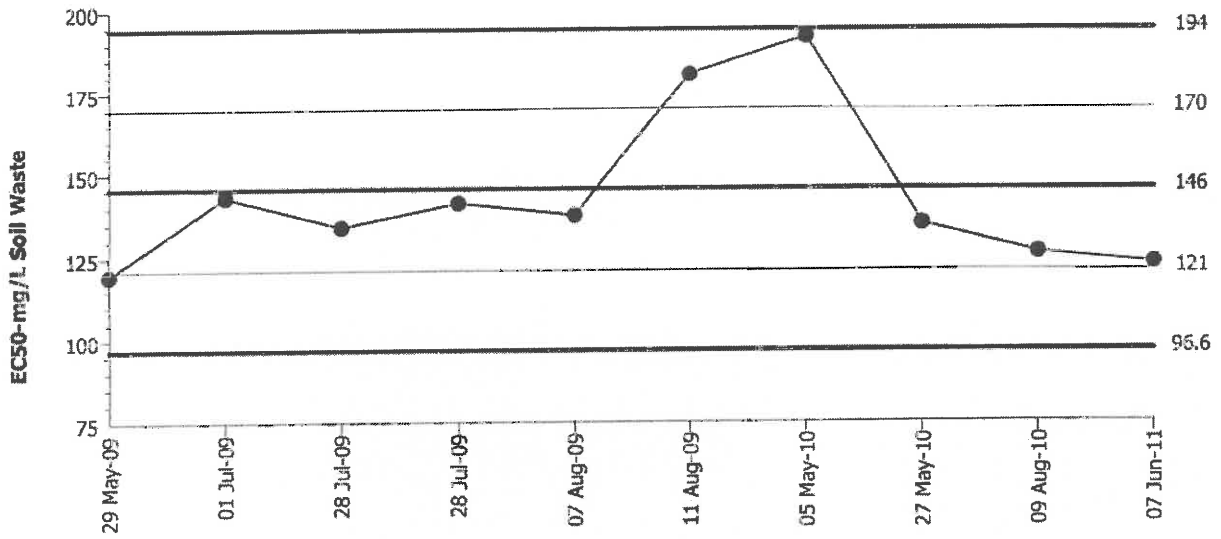
Mean: 241.4 Count: 9 -1s Warning Limit: 173.6 -2s Action Limit: 105.8
Sigma: 67.79 CV: 28.10% +1s Warning Limit: 309.2 +2s Action Limit: 377

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2009	May	29	220.6	-20.79	-0.3067			09-0219-1410	13-2075-5309
2		Jul	1	204.7	-36.73	-0.5415			11-7520-9930	03-2799-1846
3			28	247.1	5.725	0.08445			11-1163-7315	08-7410-7616
4			28	222.6	-18.81	-0.2774			18-2758-4943	00-2970-8628
5		Aug	7	217.2	-24.18	-0.3567			15-7179-2232	06-8206-1666
6			11	308.6	67.19	0.9912			11-5703-1897	11-2523-5381
7	2010	May	5	390.1	148.7	2.194	(+)	(+)	18-1256-6303	03-7353-3083
8			27	183	-58.44	-0.8621			07-5797-7609	02-8368-1573
9		Aug	9	178.5	-62.87	-0.9274			12-0568-9729	00-4825-3515
10	2011	Jun	7	174.4	-67.04	-0.9889			14-4891-1513	00-5788-6680

Early Seedling Growth		Nautilus Environmental WA	
Test Type: Survival-Growth	Organism: Lactuca sativa (Lettuce)	Material: Soil Waste	
Protocol: WDOE 96-324	Endpoint: Mean Dry Biomass-mg	Source: Reference Toxicant-REF	

Early Seedling Growth



Mean: 145.5 Count: 9 -1s Warning Limit: 121.1 -2s Action Limit: 96.62
 Sigma: 24.44 CV: 16.80% +1s Warning Limit: 169.9 +2s Action Limit: 194.4

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2009	May	29	119.5	-25.98	-1.063	(-)		09-0219-1410	17-6385-6463
2		Jul	1	143.2	-2.338	-0.09565			11-7520-9930	03-2381-2203
3			28	134	-11.49	-0.47			11-1163-7315	02-6860-1115
4			28	141.2	-4.285	-0.1753			18-2758-4943	06-5912-1272
5		Aug	7	137.6	-7.927	-0.3244			15-7179-2232	09-0615-4224
6			11	180.6	35.06	1.435	(+)		11-5703-1897	06-6378-5558
7	2010	May	5	192.1	46.62	1.908	(+)		18-1256-6303	11-1099-1174
8			27	135	-10.5	-0.4295			07-5797-7609	00-1486-3034
9		Aug	9	126.2	-19.28	-0.7888			12-0568-9729	16-9445-1694
10	2011	Jun	7	123.1	-22.38	-0.9158			14-4891-1513	14-6511-7777

CETIS Summary Report

Report Date: 31 Aug-11 16:13 (p 1 of 1)
 Test Code: RT060711LS | 14-4891-1513

Early Seedling Growth							Nautilus Environmental WA				
Batch ID:	18-2865-3267	Test Type:	Survival-Growth	Analyst:	Meghan Feuk						
Start Date:	07 Jun-11 14:30	Protocol:	WDOE 96-324	Diluent:	Not Applicable						
Ending Date:	21 Jun-11 13:00	Species:	Lactuca sativa	Brine:							
Duration:	13d 22h	Source:	Territorial Seed Company	Age:							
Sample ID:	02-9240-0634	Code:	RT060711LS	Client:	Reference Toxicant Test						
Sample Date:	07 Jun-11 14:30	Material:	Soil Waste	Project:							
Receive Date:	07 Jun-11 14:30	Source:	Reference Toxicant								
Sample Age:	N/A	Station:									
Comparison Summary											
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method				
16-6058-4487	Mean Dry Biomass-mg	80	160	113.1	36.9%		Steel Many-One Rank Test				
13-0090-5880	Survival Rate	80	160	113.1	15.0%		Dunnett's Multiple Comparison Test				
Point Estimate Summary											
Analysis ID	Endpoint	Level	mg/kg	95% LCL	95% UCL	TU	Method				
14-6511-7777	Mean Dry Biomass-mg	IC25	96.96	69.77	107.2		Linear Interpolation (ICPIN)				
		IC50	123.1	103	141.1						
00-5786-6660	Survival Rate	EC50	174.4	156.8	193.9		Trimmed Spearman-Kärber				
Mean Dry Biomass-mg Summary											
Conc-mg/kg	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Background Soil	5	1.025	0.8562	1.193	0.3375	1.398	0.2003	0.448	43.68%	0.0%
40		5	1.345	1.234	1.456	0.9925	1.786	0.1329	0.2972	22.1%	-31.13%
80		5	1.127	1.035	1.219	0.9242	1.502	0.11	0.246	21.82%	-9.93%
160		5	0.2675	0.2004	0.3346	0.01	0.5108	0.08033	0.1796	67.15%	73.91%
320		5	0.027	0.005819	0.04818	0	0.1283	0.02537	0.05672	210.1%	97.37%
640		5	0.013	0.002146	0.02386	0	0.065	0.013	0.02907	223.6%	98.73%
Survival Rate Summary											
Conc-mg/kg	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Background Soil	5	0.95	0.933	0.967	0.9167	1	0.02041	0.04564	4.81%	0.0%
40		5	0.9667	0.9388	0.9945	0.8333	1	0.03333	0.07454	7.71%	-1.75%
80		5	0.9333	0.9194	0.9472	0.9167	1	0.01667	0.03727	3.99%	1.75%
160		5	0.55	0.4577	0.6423	0.25	0.9167	0.1106	0.2472	44.95%	42.11%
320		5	0.06667	0.03258	0.1008	0	0.1667	0.04082	0.09129	136.9%	92.98%
640		5	0.01567	0.002751	0.03053	0	0.08333	0.01667	0.03727	223.6%	98.25%
Mean Dry Biomass-mg Detail											
Conc-mg/kg	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	Background Soil	1.398	1.232	0.3375	0.8133	1.347					
40		0.9925	1.169	1.393	1.786	1.383					
80		0.9242	0.9342	1.502	1.246	1.031					
160		0.3042	0.225	0.01	0.5108	0.2875					
320		0	0.006663	0	0.1283	0					
640		0	0	0	0	0.065					
Survival Rate Detail											
Conc-mg/kg	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	Background Soil	1	1	0.9167	0.9167	0.9167					
40		1	1	1	0.8333	1					
80		0.9167	0.9167	0.9167	0.9167	1					
160		0.5833	0.4167	0.25	0.9167	0.5833					
320		0	0.1667	0	0.1667	0					
640		0	0	0	0	0.08333					

14-Day Soil Toxicity Test

Soil Quality Measurements

Client: Reference Toxicant
 Sample ID: 640mg/Kg BHC00
 Test ID: R10100711-8

Test Species: *Lactuca sativa* (butlet crunch lettuce)
 Start Date/Time: 6/17/11 1430
 End Date/Time: 6/21/11 1300

Test Day	Temperature (°C)	Light Intensity (Lux)	Tech Initials
0	21.5	2197	(M)
1	24.0		(M)
2	27.0		AF
3	25.0		AF
4	23.8		AF
5	24.0		AF
6	23.0		(M)
7	23.8	2162	AF
8	24.0		OP
9	25.5		OP
10	24.8		OP
11	26.0		OP
12	26.0		(M)
13	23.5		BP
14	20.0	2198	(M)

Conc. (ppm)	Soil slurry pH (units)		Soil supernatant pH (units)	
	initial	final	initial	final
Lab Control	7.27	7.81	7.37	7.70
40	7.15	7.64	7.13	7.71
80	7.10	7.59	7.07	7.65
160	7.07	7.60	7.09	7.63
320	7.05	7.48	7.11	7.51
640	6.93	7.40	7.07	7.46
Tech Initials	BP	(M)	BP	(M)

Test Chamber: Room A

Comments: _____
 QC Check: (M)

Nautilus Environmental
 Washington Laboratory
 5009 Pacific Hwy., E., Suite 2
 Tacoma, WA 98424
 (253) 922-4296

Soil Toxicity Test

Lettuce Seed Daily Germination Counts

Client/Sample ID: Reference Toxicant

Test No: PTD007HLS

Start Date/Time: 6/7/11 1430

Tray #: RT

Test Species: Lactuca sativa (buttercrunch lettuce)

End Date/Time: 6/21/11 1300

Day 3	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	-	-	-	1	1	-
	B	6	-	-	3	-	-
	C	2	-	-	-	-	-
	D	-	-	-	1	-	-
	E	-	-	-	2	-	3
	F	-	-	-	-	-	-

Day 7	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	10	8	10	12	11	6
	B	13	9	-	11	12	-
	C	11	11	-	3	1	-
	D	1	-	3	13	-	-
	E	-	2	-	11	-	12
	F	11	-	-	11	-	-

Day 11	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AC</u>	A	11	11	11	12	11	-
	B	13	10	-	11	12	-
	C	11	11	1	4	4	-
	D	2	-	4	12	-	-
	E	1	6	-	11	-	-
	F	11	-	-	11	12	-

Day 4	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	1	-	2	5	7	-
	B	13	2	-	8	7	-
	C	10	-	-	-	-	-
	D	-	-	-	3	-	-
	E	-	-	-	8	-	9
	F	10	-	-	2	-	-

Day 8	Row	Column					
		1	2	3	4	5	6
Analyst: <u>BP</u>	A	11	11	11	12	11	6
	B	13	10	-	11	12	-
	C	11	11	1	3	4	-
	D	2	-	4	12	-	-
	E	1	4	-	10	-	-
	F	11	-	-	11	12	-

Day 12	Row	Column					
		1	2	3	4	5	6
Analyst: <u>BP</u>	A	11	11	11	12	11	-
	B	13	10	-	11	12	-
	C	11	11	1	4	4	-
	D	2	-	4	12	-	-
	E	1	5	-	11	-	-
	F	11	-	-	11	12	-

Day 5	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	10	1	6	10	9	6
	B	13	9	-	9	9	-
	C	10	6	-	1	-	-
	D	-	-	2	7	-	-
	E	-	-	-	10	-	-
	F	10	-	-	6	11	-

Day 9	Row	Column					
		1	2	3	4	5	6
Analyst: <u>BP</u>	A	13	11	11	12	12	6
	B	13	10	-	11	12	-
	C	11	11	1	4	4	-
	D	2	-	4	12	-	-
	E	1	5	-	11	-	-
	F	11	-	-	11	12	-

Day 13	Row	Column					
		1	2	3	4	5	6
Analyst: <u>BP</u>	A	11	11	11	12	11	-
	B	13	10	-	11	12	-
	C	11	11	1	4	4	-
	D	2	-	4	12	-	-
	E	2	7	-	11	-	-
	F	11	-	-	11	12	-

Day 6	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	10	10	9	11	11	-
	B	13	9	-	10	11	-
	C	11	10	-	1	1	-
	D	-	-	3	11	-	-
	E	-	1	-	10	-	-
	F	11	-	-	11	12	-

Day 10	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	11	11	11	12	11	6
	B	13	10	-	11	12	-
	C	11	11	1	4	4	-
	D	2	-	4	12	-	-
	E	1	5	-	11	-	-
	F	11	-	-	11	12	-

Day 14	Row	Column					
		1	2	3	4	5	6
Analyst: <u>AF</u>	A	11	11	11	12	12	-
	B	13	10	-	11	12	-
	C	12	11	1	3	5	-
	D	2	7	7	12	12	-
	E	2	7	7	12	12	-
	F	11	-	-	11	12	-

Comments:

QC Check: AF

Nautilus Environmental
Washington Laboratory

14-Day Soil Toxicity Test
Shoot Weight Data

Client: EPF[®] Reference Toxant Start Date & Time: 10/7/11 1430
 Species: Lactuca sativa Stop Date & Time: 10/21/11 1300
 Test #'s: 1100 - TOXIC - TUNE - TD12 - RTD00711LS

Sample ID	Cont.	Rep.	No. Seedlings Emerged	Shoot Pan Tare Wt. (g)	Pan + Wet Shoot Wt. (g)	Pan + Dry Shoot Wt. (g)
CON	30	1	12	.6271088	1.95444	1.6226826
	2	2	13	.58772	1.98134	1.60374
	10	3	11	.52754	1.88160	1.53159
	23	4	11	.52307	1.331071	1.53683
	20	5	11	.56182	1.39505	1.5256950
40	25	1	12	.551613	1.93357	1.516804
	3	2	12	.60471	1.901020	1.61874
	19	3	12	.67584	2.05702	1.69256
	8	4	10	.73943	1.93591	1.76086
	26	5	12	.76734	2.071103	1.78393
80	9	1	11	.60258	1.32514	1.101367
	24	2	11	.60842	1.33918	1.61963
	1	3	11	.75529	2.040108	1.77331
	13	4	11	.67500	1.91320	1.68995
	22	5	12	.71965	1.94503	1.73202
160	11	1	7	.73111	1.62073	1.73476
	23	2	5	.73726	.76364	1.73996
	21	3	3	.55054	.56756	1.55066
	7	4	11	.54128	.62073	1.54741
	16	5	7	.52393	1.58073	1.52738
320	18	1	0	.57399		
	4	2	2	.52993	1.54589	1.53501
	14	3	0	.52811		
	5	4	2	.81667	1.82195	1.81625
	17	5	0	.60767		
640	28	1	0	.547838		
	29	2	0	1.52280		
	10	3	0	1.60600		
	12	4	0	1.49046		
	15	5	1	1.68397	1.681042	1.68168
		1				
		2				
		3				
		4				
		5				
		1				
		2				
		3				
		4				
		5				
Tech Initials:			(M)	(M)	(M)	Δ

Comments: Initial number of seeds added to each replicate = 12
 Date/Time in: 10/21/11 Oven Temp (°C): 67.0 QC: (M)
 Date/Time out: 7/5/11 1500 Oven Temp (°C): 62.0

CETIS QC Plot

Nautilus Environmental WA

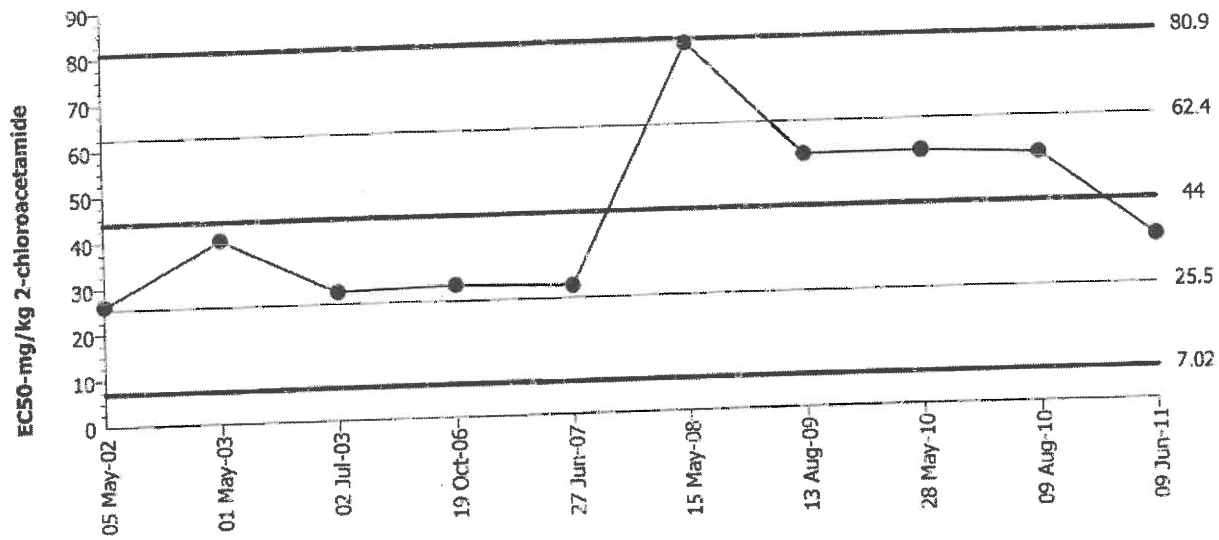
Eisenia 14-d Survival Soil Test

Test Type: Survival
 Protocol: WDOE 96-327

Organism: Eisenia fetida (Red worm)
 Endpoint: Survival Rate

Material: 2-chloroacetamide
 Source: Reference Toxicant-REF

Eisenia 14-d Survival Soil Test



Mean: 43.96 Count: 9 -1s Warning Limit: 25.49 -2s Action Limit: 7.02
 Sigma: 18.47 CV: 42.00% +1s Warning Limit: 62.43 +2s Action Limit: 80.9

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2002	May	5	26.17	-17.79	-0.9631			16-0112-7495	03-5581-6762
2	2003		1	39.91	-4.055	-0.2195			18-0678-2428	10-9716-6177
3		Jul	2	28.07	-15.89	-0.8602			02-9873-1034	00-3454-9068
4	2006	Oct	19	28.75	-15.21	-0.8232			02-3082-1435	00-0149-2749
5	2007	Jun	27	28.01	-15.95	-0.8634			19-0311-5351	13-6127-6576
6	2008	May	15	80	36.04	1.951	(+)		20-3102-3790	16-3060-0026
7	2009	Aug	13	55.16	11.2	0.6061			20-6120-4139	00-4183-4606
8	2010	May	28	55.28	11.32	0.6127			13-2033-4602	20-4300-2078
9		Aug	9	54.28	10.32	0.5589			18-7475-1619	02-4525-0355
10	2011	Jun	9	35.82	-8.136	-0.4405			14-4766-0393	16-5490-4261

CETIS Summary Report

Report Date: 29 Jun-11 14:51 (p 1 of 1)
 Test Code: RT060911EF | 14-4766-0393

Eisenia 14-d Survival Soil Test Nautilus Environmental WA

Batch ID: 20-0867-4021	Test Type: Survival	Analyst: Meghan Feuk
Start Date: 09 Jun-11 14:00	Protocol: WDOE 96-327	Diluent:
Ending Date: 23 Jun-11 14:00	Species: Eisenia fetida	Brine:
Duration: 14d 0h	Source: Aquatic Research Organisms, NH	Age:

Sample ID: 06-4903-5718	Code: RT060911EF	Client: Reference Toxicant Test
Sample Date: 09 Jun-11 14:00	Material: 2-chloroacetamide	Project:
Receive Date: 23 Jun-11 14:00	Source: Reference Toxicant	
Sample Age: N/A	Station:	

Comparison Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
14-8257-9163	Survival Rate	20	40	28.28	6.59%		Dunnett's Multiple Comparison Test

Point Estimate Summary							
Analysis ID	Endpoint	Level	mg/kg	95% LCL	95% UCL	TU	Method
16-5490-4261	Survival Rate	EC50	35.82	31.38	40.89		Trimmed Spearman-Kärber

Survival Rate Summary											
Conc-mg/kg	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Control Sed	3	1	1	1	1	1	0	0	0.0%	0.0%
10		3	0.9333	0.9118	0.9549	0.9	1	0.03333	0.05774	6.19%	6.67%
20		3	1	1	1	1	1	0	0	0.0%	0.0%
40		3	0.3667	0.3451	0.3882	0.3	0.4	0.03333	0.05774	15.75%	63.33%
80		3	0	0	0	0	0	0	0		100.0%

Survival Rate Detail				
Conc-mg/kg	Control Type	Rep 1	Rep 2	Rep 3
0	Control Sed	1	1	1
10		1	0.9	0.9
20		1	1	1
40		0.4	0.3	0.4
80		0	0	0

Environmental Quality Results - 14-Day Soil
Nautilus Environmental

Client: Reference Toxicant
 Sample ID: 80 ug/L 2-Chloroacetamide
 Test #: R1000911E

Start Date/Time: 6/9/11 14:10
 End Date/Time: 6/23/11 14:00
 Test Species: Escheria coli

Test Day	Temp (°C)	Tech Initials
0	22.0	JP
1	22.0	AF
2	21.9	AF
3	21.9	AF
4	21.9	JP
5	22.0	JP
6	21.9	BP
7	22.0	YF
8	22.0	CC
9	22.0	JP
10	22.0	YF
11	21.8	BP
12	21.9	YF
13	22.0	JP
14	22.0	JP

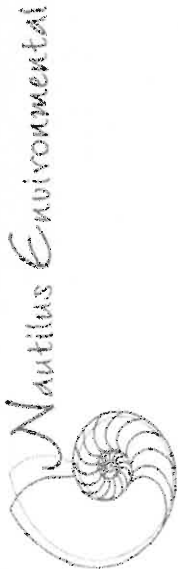
Conc. ug/L	Rep. #	Cont. #	% Moisture		pH (units)		Conductivity (uohm-cm)		Survival	
			initial	final	initial	final	initial	final	initial	final
Con	1	10	46.2	55.3	7.28	7.63	528	615	10	10
	2	5							10	10
	3	12							10	10
10	1	4	47.1	48.8	7.25	7.55	580	683	10	10
	2	11							10	9
	3	7							10	9
20	1	8	46.2	71.3	7.35	7.30	516	650	10	10
	2	6							10	10
	3	14							10	10
40	1	15	47.9	57.2	7.27	7.70	515	674	10	4
	2	2							10	3
	3	3							10	4
80	1	1	49.7	68.9	7.29	7.80	524	751	10	0
	2	9							10	0
	3	13							10	0
Tech Initials: JP, YF, BP, CC, JP, YF, BP, YF, JP, YF, JP										

Washington Laboratory - 5909 Pacific Hwy. E., Suite 2, Tacoma, WA 98424

Test Chamber: RMA

QA Review/Date: 6/29/11
 Organism Source: ATC

APPENDIX D – Chain-of-Custody Forms



Chain of Custody

TESTING LOCATION (Please Check Box)

- California
 5530 Merchandise Drive, Suite 130
 San Diego, CA 92121
 Phone 619.597.2333
 Fax 619.597.3961
- Washington
 5009 Pacific Highway East, Suite 2
 Tacoma, WA 98424
 Phone 253.922.4296
 Fax 253.922.5814
- British Columbia
 8664 Commerce Court
 Richmond, British Columbia, Canada V6A 4N3
 Phone 604.430.8773
 Fax 604.357.1361

Date 6/3/11 Page 1 of 1

ANALYSES REQUIRED

SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS	ANALYSES REQUIRED		Receipt Temperature (°C)
							BAF AS	BIASSAY - WORK	
1. SHS2-318	5/13/11		SOIL		1		X	X	22
2. WSS6-0916	5/17/11		SOIL		1		X	X	
3. ELSS-0810	5/17/11		SOIL		1		X	X	
4. STARROAD 1807	5/16/11		SOIL		1		X	X	
5. SH4-W64	5/9/11		SOIL		2		X	X	18
6. WS11-AM24	5/17/11		SOIL		1		X	X	
7. YFS5-D1	5/17/11		SOIL		1		X	X	
8. WS11-A131(BRG)	5/17/11		SOIL		1		X	X	
9. WSG-AW38(BK)	5/17/11		SOIL		1		X	X	
10. WSS6-0916	5/16/11		SOIL		1		X	X	
11. YFS3-136	5/17/11		SOIL		1		X	X	

RELINQUISHED BY (CLIENT)

Signature: [Signature] (Date) 6/3/11
 Printed Name: ERIC KOLTES
 Company: ENVIRONMENTAL PARTNERS INC.

RECEIVED BY (LABORATORY)

Signature: [Signature] (Date) 6/3/11
 Printed Name: Barbara Parsons
 Company: Nautilus

RELINQUISHED BY (COURIER)

Signature: [Signature] (Date) 6/3/11
 Printed Name: Barbara Parsons
 Company: Nautilus

RECEIVED BY (COURIER)

Signature: [Signature] (Date) 6/3/11
 Printed Name: Barbara Parsons
 Company: Nautilus

SPECIAL INSTRUCTIONS/COMMENTS:
ELSS-06 (11/11) 511-058 Letter to Earthworm

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator

Table 1
Summary of Soil Sample Analytical Results for
Diesel and Oil Range Total Petroleum Hydrocarbons (in mg/kg)
Remedial Action Excavation
Seattle, WA

Sample ID	Sample Depth (feet bgs)	Final Performance Sample	Diesel-Range TPH ^a	Oil-Range TPH ^b
LP-B-113	13	No	7,800	310
LP-B-115	16	Yes	<50	<250
LP-B-1015	16	No	<50	<250
LP-B-1116	16	Yes	<50	<250
LP-B-1520	20	No	3,800	<250
LP-B-2213.5	13.5	Yes	140	<250
LP-B-2313.5	13.5	Yes	<50	<250
LP-B-2412.5	12.5	Yes	<50	<250
LP-B-311	13	Yes	<50	<250
LP-B-3114	14	Yes	2,000	<250
LP-B-3115.5	15.5	Yes	800	<250
LP-B-3214	14	No	2,800	<250
LP-B-3221	21	Yes	<50	<250
LP-B-3412	12	Yes	470	<250
LP-B-3516	16	Yes	<50	<250
LP-B-3616	16	Yes	<50	<250
LP-B-3714	14		<50	<250
LP-B-4513	13	Yes	<50	<250
LP-B-4514	14	Yes	<50	<250
LP-B-4614	14	Yes	<50	<250
LP-B-5017	17	No	2,800	<250
LP-B-5315	15	Yes	<50	<250
LP-B-5415	15	Yes	<50	<250
LP-B-5517	17	Yes	1,700	<250
LP-B-5615	15	Yes	<50	<250
LP-B-6113	13	Yes	<50	<250
LP-B-6213	13	Yes	1,800	<250
LP-B-6312.5	12.5	Yes	<50	<250
LP-B-6513	13	Yes	1,700	<250
LP-B-6613	13	Yes	<50	<250
DLP-B-6613	13	Yes	<50	<250
LP-B-6712.5	12.5	Yes	1,400	<250
LP-B-6813.5	13.5	Yes	<50	<250
LP-B-7015	15	No	2,800	<250
LP-B-7023.5	23.5	No	3,600	<250
LP-B-7524	24	Yes	<50	<250
LP-B-7624	24	Yes	<50	<250
LP-B-815	15	Yes	<50	<250
LP-B-8012.5	12.5	Yes	<50	<250
DLP-B-8012.5	12.5	Yes	<50	<250
LP-B-8125	25	Yes	<50	<250
LP-B-8514	14	Yes	<50	<250
LP-B-8523	23	Yes	<50	<250
DLP-B-8523	23	Yes	<50	<250
LP-B-913	13	Yes	<50	<250
LP-B-8217	17	Yes	<50	<250
LP-ESW-210	10	No	6,800	<250
LP-ESW-4211	11	Yes	<50	<250
LP-ESW-4712.5	12.5	Yes	<50	<250
LP-ESW-6811	11	Yes	9,200	<250
LP-ESW-693.5	3.5	Yes	<50	<250
LP-ESW-7113	13	Yes	2,400	<250
LP-ESW-7210	10	Yes	7,800	<250
LP-ESW-7311.5	11.5	Yes	1,450	<250
LP-ESW-7318	18	Yes	110	<250
LP-ESW-739	9	Yes	12,800	374
LP-ESW-7414	14	Yes	6,600	<250
LP-ESW-7422	22	Yes	4,800	<250
LP-ESW-749	9	Yes	<50	<250
LP-NSW-1810	10	Yes	<50	<250
LP-NSW-1111	11	Yes	<50	<250
LP-NSW-1811.5	11.5	Yes	<50	<250
LP-NSW-3010	10		<50	<250
LP-NSW-411	11	No	7,700	389
LP-NSW-4R11	11	Yes	<50	<250
LP-NSW-1010.5	10.5	No	3,600	378
LP-NSW-7R10.5	10.5	Yes	230	<250
LP-S-558.5	8.5		610	<250
LP-SSW-2211	11	No	12,000	<250
LP-SSW-3011	11	Yes	2,200	<250
LP-SSW-3712	12	No	13,000	360
LP-SSW-3813	13	No	5,800	<250
LP-SSW-4014	14	No	7,200	<250
LP-SSW-4019	19	No	12,900	389
LP-SSW-4025	25	Yes	170	<250
LP-SSW-409	9	Yes	<50	<250
LP-SSW-40R14	14	Yes	3,400	<250
LP-SSW-40R19	19	Yes	<50	<250
LP-SSW-4411	11	No	3,600	<250
LP-SSW-4413	13	Yes	800	<250
LP-SSW-449.5	9.5	Yes	<50	<250
LP-SSW-44R11	11	Yes	4,800	<250
LP-SSW-4814	14	Yes	670	<250
LP-SSW-4814	14	Yes	8,200	<250
LP-SSW-4818	18	Yes	1,400	<250
LP-SWS-1312	12	Yes	<50	<250
LP-SWS-1411	11	Yes	<50	<250
LP-WSW-1612	12	Yes	<50	<250
LP-WSW-2010.5	10.5	Yes	2,000	<250
LP-WSW-2111	11	No	17,000	439
LP-WSW-21R11	11	Yes	<50	<250
LP-WSW-3911	11	No	2,800	<250
LP-WSW-39R11	11	Yes	<50	<250
LP-WSW-511	11	No	3,000	380
LP-WSW-5R11	11	Yes	<50	<250
LP-WSW-5112	12	No	10,000	<250
LP-WSW-5115	15	Yes	<50	<250
LP-WSW-519.5	9.5	Yes	<50	<250
LP-WSW-51RR12	12	Yes	1,500	<250
LP-WSW-5212	12	No	2,300	<250
LP-WSW-529.5	9.5	Yes	430	<250
LP-WSW-5711.5	11.5	Yes	<50	<250
LP-WSW-5810	10	Yes	<50	<250
LP-WSW-5811	11	Yes	<50	<250
LP-WSW-611.5	1.5	No	7,200	359
LP-WSW-6R11.5	11.5	No	2,800	<250
LP-WSW-6RR11.5	11.5	Yes	<50	<250
LP-WSW-6912	12	Yes	<50	<250
MTCA Method A Soil Cleanup Level for Unrestricted Land Use			2,000	2,000

B-64:12.57

Notes:
 (A) Analyzed for diesel-range total petroleum hydrocarbons (DRPH) using Ecology Method NWTPH-Dx
 (B) Analyzed for oil-range total petroleum hydrocarbons (ORPH) using Ecology Method NWTPH-Dx
 B = bottom of excavation soil sample
 bgs = below ground surface
 Soil sample analysis performed by Friedman & Bruye, Inc.
 mg/kg = milligram per kilogram
 NA = not applicable
 Bold = Concentration detected, but below MTCA Method A Soil Cleanup Levels for Unrestricted Land Use
 Bold and Italicized = Concentration above MTCA Method A Soil Cleanup Level for Unrestricted Land Use
 DLP = Duplicate sample

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-28213-1
Client Project/Site: EPI-As

For:
Nautilus Environmental
5009 Pacific Hwy. East
Suite 2
Tacoma, Washington 98424

Attn: Cat Curran

Kristine D. Allen

Authorized for release by:
09/02/2011 02:20:11 PM

Kristine Allen
Project Manager I
kristine.allen@testamericainc.com

Designee for
Melissa Armstrong
Project Manager I
melissa.armstrong@testamericainc.com

LINKS

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results through

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.



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Case Narrative

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Job ID: 580-28213-1

Laboratory: TestAmerica Seattle

Narrative

Receipt

The following samples were received at the laboratory outside the required temperature criteria: Control (580-28213-1), SMSS-0810 (580-28213-3), SMSS-BG (580-28213-2) at 6.8c.

Sample collection dates and times were not recorded on the sample containers. The samples were logged-in and labeled according to the sample dates and times reported on the Chain of Custody (COC).

Metals

No analytical or quality issues were noted.

Definitions/Glossary

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit (Dioxin)
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or method detection limit if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Client Sample ID: Control
Date Collected: 08/22/11 10:00
Date Received: 08/23/11 15:25

Lab Sample ID: 580-28213-1
Matrix: Tissue

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		09/01/11 14:39	09/01/11 23:57	1

5

Client Sample Results

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Client Sample ID: SMSS-BG

Lab Sample ID: 580-28213-2

Date Collected: 08/22/11 10:00

Matrix: Tissue

Date Received: 08/23/11 15:25

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.3		mg/Kg		09/01/11 14:39	09/02/11 00:04	1

5

Client Sample Results

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Client Sample ID: SMSS-0810

Lab Sample ID: 580-28213-3

Date Collected: 08/22/11 10:00

Matrix: Tissue

Date Received: 08/23/11 15:25

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.1		mg/Kg		09/01/11 14:39	09/02/11 00:11	1

5

QC Sample Results

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 580-94336/4-A
Matrix: Tissue
Analysis Batch: 94381

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 94336

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		3.0		mg/Kg		09/01/11 14:39	09/01/11 23:38	1

Lab Sample ID: LCS 580-94336/5-A
Matrix: Tissue
Analysis Batch: 94381

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 94336

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Arsenic	200	190		mg/Kg		95	80 - 120

Lab Sample ID: LCSD 580-94336/6-A
Matrix: Tissue
Analysis Batch: 94381

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 94336

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Arsenic	200	190		mg/Kg		95	80 - 120	0	20

Lab Chronicle

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Client Sample ID: Control

Lab Sample ID: 580-28213-1

Date Collected: 08/22/11 10:00

Matrix: Tissue

Date Received: 08/23/11 15:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			94336	09/01/11 14:39	PAB	TAL SEA
Total/NA	Analysis	6010B		1	94381	09/01/11 23:57	SP	TAL SEA

Client Sample ID: SMSS-BG

Lab Sample ID: 580-28213-2

Date Collected: 08/22/11 10:00

Matrix: Tissue

Date Received: 08/23/11 15:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			94336	09/01/11 14:39	PAB	TAL SEA
Total/NA	Analysis	6010B		1	94381	09/02/11 00:04	SP	TAL SEA

Client Sample ID: SMSS-0810

Lab Sample ID: 580-28213-3

Date Collected: 08/22/11 10:00

Matrix: Tissue

Date Received: 08/23/11 15:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			94336	09/01/11 14:39	PAB	TAL SEA
Total/NA	Analysis	6010B		1	94381	09/02/11 00:11	SP	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Seattle	Alaska	Alaska UST	10	UST-022
TestAmerica Seattle	Alaska	TA-Port Heiden Mobile Lab	10	UST-093
TestAmerica Seattle	California	NELAC	9	1115CA
TestAmerica Seattle	Florida	NELAC	4	E871074
TestAmerica Seattle	L-A-B	DoD ELAP		L2236
TestAmerica Seattle	L-A-B	ISO/IEC 17025		L2236
TestAmerica Seattle	Louisiana	NELAC	6	05016
TestAmerica Seattle	Montana	MT DEQ UST	8	N/A
TestAmerica Seattle	Oregon	NELAC	10	WA100007
TestAmerica Seattle	USDA	USDA		P330-11-00222
TestAmerica Seattle	Washington	State Program	10	C553

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

8

Sample Summary

Client: Nautilus Environmental
Project/Site: EPI-As

TestAmerica Job ID: 580-28213-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
580-28213-1	Control	Tissue	08/22/11 10:00	08/23/11 15:25
580-28213-2	SMSS-BG	Tissue	08/22/11 10:00	08/23/11 15:25
580-28213-3	SMSS-0810	Tissue	08/22/11 10:00	08/23/11 15:25

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
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Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

Rush
 Short Hold

**Chain of
Custody Record**

Client: **X** Nautlius Envir.

Client Contact: **CAT CURRAN**

Date: **8-23-11**

Chain of Custody Number: **12259**

Address: **5009 Pacific Hwy E Ste 2**

Telephone Number (Area Code)/Fax Number: **253-922-4296**

Lab Number: **090213**

Page **1** of **1**

City: **Fife** State: **WA** Zip Code: **98424**

Sampler: **SD**

Lab Contact: **Melissa A**

Project Name and Location (State): **EPI-AS**

Billing Contact: **Nicki Mansouri**

Special Instructions/
Conditions of Receipt:

Contract/Purchase Order/Quote No.

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix							Containers & Preservatives	Analysis (Attach list if more space is needed)	
			Air	Aqueous	Sed.	Soil	W or MS	Unpres.	H2SO4			
CONTROL	8-22-11	10am										
SMSS-BG	8-22-11	10am				X	X	X				X
SMSS-0810	8-22-11	10am										X

PRJ=1e.0/6.8
MEA.R/W
METICEI/OTNER
WHP CS

Cooler Yes No Cooler Temp: _____ Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Sample Disposal Return to Client Disposal By Lab Archive For _____ Months
 Turn Around Time Required (business days) 24 Hours 48 Hours 5 Days 10 Days 15 Days Other _____
 QC Requirements (Specify) _____
 (A fee may be assessed if samples are retained longer than 1 month)

1. Relinquished By Sign/Print: **Cat Curran** Date: **8-23-11** Time: **1525**
 Received By Sign/Print: **Santof Rodriguez** Date: **8/23/11** Time: **1525**

2. Relinquished By Sign/Print: **Cat Curran** Date: _____ Time: _____
 Received By Sign/Print: **Santof Rodriguez** Date: _____ Time: _____

3. Relinquished By Sign/Print: _____ Date: _____ Time: _____

Login Sample Receipt Checklist

Client: Nautilus Environmental

Job Number: 580-28213-1

Login Number: 28213

List Source: TestAmerica Seattle

List Number: 1

Creator: Kalicki, Samantha

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	Refer to Job Narrative for details.
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	Not needed on tissue.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	No VOA rec'd.
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

Attachment E

**Cleanup Levels for Potential TEE Receptors
Northwest Pipeline GP, Washington State Meter Station Facilities
Northwest Washington Representation Area
ARSENIC**

Cleanup Level for Avian Predator (Robin)
Equation in Table 749-4

Soil CUL =		$\frac{\text{T robin}}{(\text{FIR robin} \times \text{Psb robin} \times \text{BAF worm}) + (\text{SIR robin} \times \text{RGAF robin})}$	
CUL	Units		
58	mg/kg		
Variable	Unit	Value	
Psb robin	Unitless	0.52	
FIR robin	kg dry food / kg body weight - day	0.207	
SIR robin	kg dry soil / kg body weight - day	0.0215	
RGAF robin	Unitless (Table 749-5)	1	
T robin	mg/kg - day (Table 749-5 footnote a)	2.24	
Home Range	Acres	0.6	
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)	0.16	

- Notes:
- Psb Proportion of contaminated food in diet
 - FIR Food ingestion rate
 - SIR Soil ingestion rate
 - RGAF Gut Absorption Factor
 - T Toxicity Reference Value from Ecological Screening Levels for Arsenic, US EPA, March 2005
 - BAF Site Specific Bioaccumulation Factor

Cleanup Level for Mammalian Herbivore (Vole)
Equation in Table 749-4

Soil CUL =		$\frac{\text{T vole}}{(\text{FIR vole} \times \text{P plant, vole} \times \text{K plant}) + (\text{SIR vole} \times \text{RGAF vole})}$	
CUL	Units		
43	mg/kg		
Variable	Unit	Value	
T vole	mg/kg - day	1.15	
FIR vole	kg dry food / kg body weight - day	0.315	
P plant, vole	unitless	1	
K plant	mg/kg worm / mg/kg soil	0.06	
SIR vole	kg dry soil / kg body weight - day	0.0079	
RGAF vole	Unitless (Chemical specific-As)	1	

- Notes:
- T Toxicity Reference Value
 - FIR Food ingestion rate
 - P Proportion of contaminated food in diet
 - K Plant uptake coefficient
 - SIR Soil ingestion rate
 - RGAF Gut Absorption Factor

Cleanup Level for Mammalian Predator (Shrew)
Equation in Table 749-4

Soil CUL =		$\frac{\text{T shrew}}{(\text{FIR shrew} \times \text{Psb shrew} \times \text{BAF worm}) + (\text{SIR shrew} \times \text{RGAF shrew})}$	
CUL	Units		
47	mg/kg		
Variable	Unit	Value	
T shrew	mg/kg - day	1.89	
FIR shrew	kg dry food / kg body weight - day	0.45	
Psb shrew	unitless	0.5	
Psb worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)	0.16	
SIR shrew	kg dry soil / kg body weight - day	0.0045	
RGAF shrew	Unitless (Chemical specific-As)	1	

- Notes:
- T Toxicity Reference Value
 - FIR Food ingestion rate
 - P Proportion of contaminated food in diet
 - BAF Bioaccumulation factor
 - SIR Soil ingestion rate
 - RGAF Gut Absorption Factor
 - BAF Site Specific Bioaccumulation Factor

TEE Book Value CUL Protective of Plants
Table 749-3

CUL	Units
10	mg/kg

TEE Book Value CUL Protective of Soil Biota
Table 749-3

CUL	Units
60	mg/kg

Cleanup Levels for Potential TEE Receptors
Northwest Pipeline GP, Washington State Meter Station Facilities
Southwest Washington/Columbia River Representation Area
ARSENIC

Cleanup Level for Avian Predator (Robin)
Equation in Table 749-4

Soil CUL =		T robin	
		(FIR robin X Psb robin X BAF worm) + (SIR robin X RGAF robin)	
CUL	Units		
45	mg/kg		
Variable	Unit		Value
Psb robin	Unitless		0.52
FIR robin	kg dry food / kg body weight - day		0.207
SIR robin	kg dry soil / kg body weight - day		0.0215
RGAF robin	Unitless (Table 749-5)		1
T robin	mg/kg - day (Table 749-5 footnote a)		2.24
Home Range	Acres		0.6
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)		0.26

Notes:
Psb Proportion of contaminated food in diet
FIR Food ingestion rate
SIR Soil ingestion rate
RGAF Gut Absorption Factor
T Toxicity Reference Value from Ecological Screening Levels for Arsenic, US EPA, March 2005
BAF Site Specific Bioaccumulation Factor

Cleanup Level for Mammalian Herbivore (Vole)
Equation in Table 749-4

Soil CUL =		T vole	
		(FIR vole X P plant, vole X K plant) + (SIR vole X RGAF vole)	
CUL	Units		
43	mg/kg		
Variable	Unit		Value
T vole	mg/kg - day		1.15
FIR vole	kg dry food / kg body weight - day		0.315
P plant, vole	unitless		1
K plant	mg/kg worm / mg/kg soil		0.06
SIR vole	kg dry soil / kg body weight - day		0.0079
RGAF vole	Unitless (Chemical specific-As)		1

Notes:
T Toxicity Reference Value
FIR Food ingestion rate
P Proportion of contaminated food in diet
K Plant uptake coefficient
SIR Soil ingestion rate
RGAF Gut Absorption Factor

Cleanup Level for Mammalian Predator (Shrew)
Equation in Table 749-4

Soil CUL =		T shrew	
		(FIR shrew X Psb shrew X BAF worm) + (SIR shrew X RGAF shrew)	
CUL	Units		
30	mg/kg		
Variable	Unit		Value
T shrew	mg/kg - day		1.89
FIR shrew	kg dry food / kg body weight - day		0.45
Psb shrew	unitless		0.5
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)		0.26
SIR shrew	kg dry soil / kg body weight - day		0.0045
RGAF shrew	Unitless (chemical specific-As)		1

Notes:
T Toxicity Reference Value
FIR Food ingestion rate
P Proportion of contaminated food in diet
BAF Bioaccumulation factor
SIR Soil ingestion rate
RGAF Gut Absorption Factor
BAF Site Specific Bioaccumulation Factor

TEE Book Value CUL Protective of Plants
Table 749-3

CUL	Units
10	mg/kg

TEE Book Value CUL Protective of Soil Biota
Table 749-3

CUL	Units
60	mg/kg

**Cleanup Levels for Potential TEE Receptors
Northwest Pipeline GP, Washington State Meter Station Facilities
Central Washington Representation Area
ARSENIC**

**Cleanup Level for Avian Predator (Robin)
Equation in Table 749-4**

Soil CUL =		T robin	
		$(FIR\ robin \times Psb\ robin \times BAF\ worm) + (SIR\ robin \times RGAF\ robin)$	
CUL	Units		
29	mg/kg		
Variable	Unit		Value
Psb robin	Unitless		0.52
FIR robin	kg dry food / kg body weight - day		0.207
SIR robin	kg dry soil / kg body weight - day		0.0215
RGAF robin	Unitless (Table 749-5)		1
T robin	mg/kg - day (Table 749-5 footnote a)		2.24
Home Range	Acres		0.6
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)		0.53

Notes:
 Psb Proportion of contaminated food in diet
 FIR Food ingestion rate
 SIR Soil ingestion rate
 RGAF Gut Absorption Factor
 T Toxicity Reference Value from Ecological Screening Levels for Arsenic, US EPA, March 2005
 BAF Site Specific Bioaccumulation Factor

**Cleanup Level for Mammalian Herbivore (Vole)
Equation in Table 749-4**

Soil CUL =		T vole	
		$(FIR\ vole \times P\ plant; \text{vole} \times K\ plant) + (SIR\ vole \times RGAF\ vole)$	
CUL	Units		
43	mg/kg		
Variable	Unit		Value
T vole	mg/kg - day		1.15
FIR vole	kg dry food / kg body weight - day		0.315
P plant, vole	unitless		1
K plant	mg/kg worm / mg/kg soil		0.06
SIR vole	kg dry soil / kg body weight - day		0.0079
RGAF vole	Unitless (Chemical specific-As)		1

Notes:
 T Toxicity Reference Value
 FIR Food Ingestion rate
 P Proportion of contaminated food in diet
 K Plant uptake coefficient
 SIR Soil Ingestion rate
 RGAF Gut Absorption Factor

**Cleanup Level for Mammalian Predator (Shrew)
Equation in Table 749-4**

Soil CUL =		T shrew	
		$(FIR\ shrew \times Psb\ shrew \times BAF\ worm) + (SIR\ shrew \times RGAF\ shrew)$	
CUL	Units		
15	mg/kg		
Variable	Unit		Value
T shrew	mg/kg - day (Table 749-5)		1.89
FIR shrew	kg dry food / kg body weight - day		0.45
Psb shrew	unitless		0.5
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)		0.53
SIR shrew	kg dry soil / kg body weight - day		0.0045
RGAF shrew	Unitless (Chemical specific-As)		1

Notes:
 T Toxicity Reference Value
 FIR Food ingestion rate
 P Proportion of contaminated food in diet
 BAF Bioaccumulation factor
 SIR Soil ingestion rate
 RGAF Gut Absorption Factor
 BAF Site Specific Bioaccumulation Factor

**TEE Book Value CUL Protective of Plants
Table 749-3**

CUL	Units
10	mg/kg

**TEE Book Value CUL Protective of Soil Biota
Table 749-3**

CUL	Units
60	mg/kg

**Cleanup Levels for Potential TEE Receptors
Northwest Pipeline GP, Washington State Meter Station Facilities
Eastern Washington Representation Area
ARSENIC**

**Cleanup Level for Avian Predator (Robin)
Equation in Table 749-4**

Soil CUL =		T robin
		$(\text{FIR robin} \times \text{psb robin} \times \text{BAF worm}) + (\text{SIR robin} \times \text{RGAF robin})$
CUL	Units	
63	mg/kg	
Variable	Unit	Value
psb robin	Unitless	0.52
FIR robin	kg dry food / kg body weight - day	0.207
SIR robin	kg dry soil / kg body weight - day	0.0215
RGAF robin	Unitless (Table 749-5)	1
T robin	mg/kg - day (Table 749-5 footnote a)	2.24
Home Range	Acres	0.6
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)	0.13

Notes:
 psb Proportion of contaminated food in diet
 FIR Food ingestion rate
 SIR Soil ingestion rate
 RGAF Gut Absorption Factor
 T Toxicity Reference Value from Ecological Screening Levels for Arsenic, US EPA, March 2005
 BAF Site Specific Bioaccumulation Factor

**Cleanup Level for Mammalian Herbivore (Vole)
Equation in Table 749-4**

Soil CUL =		T vole
		$(\text{FIR vole} \times \text{P plant, vole} \times \text{K plant}) + (\text{SIR vole} \times \text{RGAF vole})$
CUL	Units	
43	mg/kg	
Variable	Unit	Value
T vole	mg/kg - day	1.15
FIR vole	kg dry food / kg body weight - day	0.315
P plant, vole	Unitless	1
K plant	mg/kg worm / mg/kg soil	0.06
SIR vole	kg dry soil / kg body weight - day	0.0079
RGAF vole	Unitless (Chemical specific-As)	1

Notes:
 T Toxicity Reference Value
 FIR Food ingestion rate
 P Proportion of contaminated food in diet
 K Plant uptake coefficient
 SIR Soil ingestion rate
 RGAF Gut Absorption Factor

**Cleanup Level for Mammalian Predator (Shrew)
Equation in Table 749-4**

Soil CUL =		T shrew
		$(\text{FIR shrew} \times \text{psb shrew} \times \text{BAF worm}) + (\text{SIR shrew} \times \text{RGAF shrew})$
CUL	Units	
56	mg/kg	
Variable	Unit	Value
T shrew	mg/kg - day (Table 749-5)	1.89
FIR shrew	kg dry food / kg body weight - day	0.45
psb shrew	Unitless	0.5
BAF worm	mg/kg worm / mg/kg soil (Table 749-5 footnote a)	0.13
SIR shrew	kg dry soil / kg body weight - day	0.0045
RGAF shrew	Unitless (Chemical specific-As)	1

Notes:
 T Toxicity Reference Value
 FIR Food ingestion rate
 P Proportion of contaminated food in diet
 BAF Bioaccumulation Factor
 SIR Soil ingestion rate
 RGAF Gut Absorption Factor
 BAF Site Specific Bioaccumulation Factor

**TEE Book Value CUL Protective of Plants
Table 749-3**

CUL	Units
10	mg/kg

**TEE Book Value CUL Protective of Soil Biota
Table 749-3**

CUL	Units
60	mg/kg

ATTACHMENT B

SITE ASSESSMENT
LABORATORY ANALYTICAL REPORTS





ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
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Tax I.D. 62-0814289

Est. 1970

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660

Houston, TX 77077

Report Summary

Friday November 07, 2008

Report Number: L372683

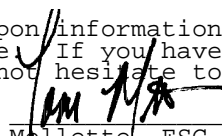
Samples Received: 10/31/08

Client Project: FINLEY

Description: Washington State

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Tom Mellette, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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Where applicable, sampling conducted by ESC is performed per guidance provided
in laboratory standard operating procedures: 060302, 060303, and 060304.

7 Samples Reported: 11/07/08 15:33 Printed: 11/07/08 17:36
Page 1 of 10



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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-0912:0
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-01

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	94.1		94.1		%	2540G	11/06/08
Mercury	BDL	0.20	BDL	0.21	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-0912:12
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-02
Site ID : FINLEY
Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.0		87.0		%	2540G	11/06/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-1012:0
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-03

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.3		95.3		%	2540G	11/06/08
Mercury	20.	1.0	21.	1.0	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-1012:12
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-04

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.2		89.2		%	2540G	11/06/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-1111:0
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-05

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	92.0		92.0		%	2540G	11/06/08
Mercury	0.32	0.20	0.35	0.22	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-1111:12
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-06

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.0		87.0		%	2540G	11/06/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

November 07, 2008

Date Received : October 31, 2008
Description : Finley
Sample ID : FCSS-0912:0.5
Collected By : A. Hopkins
Collection Date : 10/29/08 00:00

ESC Sample # : L372683-07

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	94.5		94.5		%	2540G	11/06/08
Mercury	BDL	0.20	BDL	0.21	mg/kg	7471	11/07/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L372683-01	WG391785	SAMP	Mercury	R529745	O
L372683-02	WG391785	SAMP	Mercury	R529745	O
L372683-04	WG391785	SAMP	Mercury	R529745	O
L372683-06	WG391785	SAMP	Mercury	R529745	O
L372683-07	WG391785	SAMP	Mercury	R529745	O

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
0	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
11/07/08 at 17:36:29

TSR Signing Reports: 690
R5 - Desired TAT

Sample: L372683-01 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33
Sample: L372683-02 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33
Sample: L372683-03 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33
Sample: L372683-04 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33
Sample: L372683-05 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33
Sample: L372683-06 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33
Sample: L372683-07 Account: PORTENVTX Received: 10/31/08 09:00 Due Date: 11/07/08 00:00 RPT Date: 11/07/08 15:33



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L372683

Matrix: Soil - mg/kg

Project: Finley

Project No: FINLEY

Login No: L372683

Sample Number: L372683-04, -01, -05, -02, -03, -06, -07

Sample Date: 10/29/2008

Extraction Date: 11/6/2008

Analysis Date: 11/6/2008 8:04:00 PM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG392456

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L372683

Matrix: Soil - mg/kg

Project: Finley

Project No: FINLEY

Login No: L372683

Sample Number: L372683-04, -01, -05, -02, -03, -06, -07

Sample Date: 10/29/2008

Extraction Date: 11/6/2008

Analysis Date: 11/6/2008 8:04:00 PM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG392456

EPA ID: TN00003

Sample Duplicate

L372684-02

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	93.3	92.2	1.2	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L372683

Matrix:Soil - mg/kg

Project:Finley

Project No:FINLEY

Login No:L372683

Sample Number:L372683-04, -01, -06, -03, -05, -07, -02

Sample Date:10/29/2008

Extraction Date:11/2/2008

Analysis Date:11/7/2008 9:47:00 AM

Instrument ID:CVAA3

Analyst:429

Analytic Batch:WG391785

EPA ID: TN00003

Method Blank

Analyte	CAS	PQL
Mercury		<0.020

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	8.77	7.89	90.0	71.6 - 127.7	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L372683

Matrix:Soil - mg/kg

Project:Finley

Project No:FINLEY

Login No:L372683

Sample Number:L372683-04, -01, -06, -03, -05, -07, -02

Sample Date:10/29/2008

Extraction Date:11/2/2008

Analysis Date:11/7/2008 9:47:00 AM

Instrument ID:CVAA3

Analyst:429

Analytic Batch:WG391785

EPA ID: TN00003

Sample Duplicate

L372684-03

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Mercury	23.0	19.0	19	20	

Matrix Spike/Matrix Spike Duplicate

L372684-03

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	Qualifier	RPD	Control Limits	Qualifier
Mercury	0.250	23.0	19.9	-1240.0	18.6	-1760.0	70-130	V	6.8	20	

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Analysis/Container/Preservative

Chain of Custody
Page 1 of 1

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

A049

Phone (615) 758-5858

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Report to: Alan Hopkins

Email to: Ahopkins@pei-tx.com

Project Description: **FINLEY**

City/State Collected

Phone:

Client Project #:

ESC Key:

PORTENVTX- WAHG

FAX:

FINLEY

Collected by: **A. Hopkins**

Site/Facility ID#: **FINLEY**

P.O.#:

Collected by (signature):

[Signature]

Rush? (Lab MUST Be Notified)

___ Same Day.....200%

___ Next Day.....100%

___ Two Day.....50%

Date Results Needed:

Email? ___No___Yes

FAX? ___No___Yes

No.

of

Cnts

Packed on Ice **N** **(Y)**

Mercury, TS, OC2MODEDD

HOLD

CoCode portenvtx (lab use only)

Template/Prelogin

Shipped Via:

Remarks/Contaminant

Sample # (lab only)

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cnts	Remarks/Contaminant	Sample # (lab only)
FCSS- 0912:0	G	S		10/29/08		1		L372683-01
0912:12								02
1012:0								03
1012:12								04
111:0								05
111:12								06
0912:0.5								07

*Matrix **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other _____

pH _____ Temp _____

Remarks:

9632 6254 4360

Flow _____ Other _____

Relinquished by: (Signature) <i>[Signature]</i>	Date: 10/30/08	Time: 1200	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition: (lab use only)
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature) <i>[Signature]</i>	Temp: Amb	Bottles Received: 7203
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 10-31-08	Time: 0900
				pH Checked:	NCF:



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Est. 1970

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660

Houston, TX 77077

Report Summary

Friday September 05, 2008

Report Number: L362270

Samples Received: 08/08/08

Client Project:

Description: Washington State

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Craig Cothron, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 09227, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0710:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-01
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.2		98.2		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley

ESC Sample # : L362270-02

Sample ID : FCSS-0710:12

Site ID :

Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.3		87.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley

ESC Sample # : L362270-03

Sample ID : FCSS-0711:0

Site ID :

Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.1		98.1		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0711:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-04

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.0		88.0		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0712:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-05
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.2		98.2		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0712:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-06

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	90.6		90.6		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0808:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-07

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.3		96.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.21	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0808:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-08

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.1		86.1		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0809:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-09

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	99.0		99.0		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0809:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-10

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.4		88.4		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0810:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-11

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.3		97.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0810:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-12
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.5		88.5		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0811:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-13
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	94.8		94.8		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.21	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0811:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-14
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.0		88.0		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley

ESC Sample # : L362270-15

Sample ID : FCSS-0812:0

Site ID :

Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	93.9		93.9		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.21	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley

ESC Sample # : L362270-16

Sample ID : FCSS-0812:12

Site ID :

Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	90.5		90.5		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0907:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-17
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.4		98.4		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0907:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-18
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.9		86.9		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley

ESC Sample # : L362270-19

Sample ID : FCSS-0908:0

Site ID :

Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.9		97.9		%	2540G	09/04/08
Mercury	0.25	0.20	0.26	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0908:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-20

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.5		87.5		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0909:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-21

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.3		98.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0909:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-22
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.6		89.6		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0910:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-23

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.3		88.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0911:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-24

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.3		89.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1006:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-25

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.8		98.8		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1006:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-26

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.2		89.2		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1007:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-27
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.3		97.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1007:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-28
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.1		88.1		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1008:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-29

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.4		98.4		%	2540G	09/04/08
Mercury	0.57	0.20	0.58	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1008:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-30
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.1		87.1		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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Alan Hopkins
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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1009:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-31

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.0		89.0		%	2540G	09/04/08
Mercury	2.2	0.20	2.4	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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Alan Hopkins
Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1010:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-32
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	91.7		91.7		%	2540G	09/04/08
Mercury	22.	1.0	24.	1.1	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1010:36
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-33

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.7		89.7		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1011:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-34

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	90.9		90.9		%	2540G	09/04/08
Mercury	0.47	0.20	0.52	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1105:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-35

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.8		98.8		%	2540G	09/04/08
Mercury	0.33	0.20	0.33	0.20	mg/kg	7471	09/01/08

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1105:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-36

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.0		88.0		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1107:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-37

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	99.1		99.1		%	2540G	09/04/08
Mercury	0.68	0.20	0.69	0.20	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1107:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-38
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.8		88.8		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1108:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-39

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.5		97.5		%	2540G	09/04/08
Mercury	15.	1.0	16.	1.0	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1108:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-40

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.4		87.4		%	2540G	09/04/08
Mercury	0.42	0.20	0.48	0.23	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1109:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-41
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.8		89.8		%	2540G	09/04/08
Mercury	48.	4.0	53.	4.4	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1110:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-42

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	85.5		85.5		%	2540G	09/04/08
Mercury	0.69	0.20	0.81	0.23	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1205:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-43
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	99.3		99.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1205:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-44

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.3		88.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Alan Hopkins
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1206:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-45

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.4		97.4		%	2540G	09/04/08
Mercury	0.30	0.20	0.31	0.20	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1206:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-46

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.5		86.5		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1207:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-47

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.8		98.8		%	2540G	09/04/08
Mercury	0.72	0.20	0.73	0.20	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1207:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-48
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.6		87.6		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1208:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-49
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.2		96.2		%	2540G	09/04/08
Mercury	9.9	2.0	10.	2.1	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1208:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-50

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.6		87.6		%	2540G	09/04/08
Mercury	0.42	0.20	0.48	0.23	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1209:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-51

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.9		97.9		%	2540G	09/04/08
Mercury	0.39	0.20	0.40	0.20	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1209:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-52
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.6		89.6		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1210:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-53

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	92.2		92.2		%	2540G	09/04/08
Mercury	0.22	0.20	0.24	0.22	mg/kg	7471	09/02/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1210:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-54
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.7		88.7		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.22	mg/kg	7471	09/01/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA1:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-55

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.5		97.5		%	2540G	09/04/08
Mercury	2.5	0.20	2.5	0.20	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA1:24
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-56

Site ID :

Project :

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time	By	Dil
TCLP Extraction	-				1311	08/29/08 0910	AJN	1
Mercury	0.023	0.0010	mg/l	0.20	7470A	09/01/08 1518	KBW	1

BDL - Below Detection Limit

Det. Limit - Estimated Quantitation Limit(EQL)

Limit - Maximum Contaminant Level as established by the US EPA

Note:

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA1:36
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-57
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	93.3		93.3		%	2540G	09/04/08
Mercury	6.5	0.40	6.9	0.43	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA2:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-58
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	85.3		85.3		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA2:36
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-59
Site ID :
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.2		87.2		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA3:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-60

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	94.5		94.5		%	2540G	09/04/08
Mercury	6.0	0.40	6.3	0.42	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Portnoy Environmental
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Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA40:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L362270-61

Site ID :

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	89.0		89.0		%	2540G	09/04/08
Mercury	35.	2.0	39.	2.2	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

September 05, 2008

Date Received : August 08, 2008
Description : Finley

ESC Sample # : L362270-62

Sample ID : FCSS-RA4:36

Site ID :

Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	88.0		88.0		%	2540G	09/04/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	09/03/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L362270-01	Mercury	O
L362270-02	Mercury	O
L362270-03	Mercury	O
L362270-04	Mercury	O
L362270-05	Mercury	O
L362270-06	Mercury	O
L362270-07	Mercury	O
L362270-08	Mercury	O
L362270-09	Mercury	O
L362270-10	Mercury	O
L362270-11	Mercury	O
L362270-12	Mercury	O
L362270-13	Mercury	O
L362270-14	Mercury	O
L362270-15	Mercury	O
L362270-16	Mercury	O
L362270-17	Mercury	O
L362270-18	Mercury	O
L362270-20	Mercury	O
L362270-21	Mercury	O
L362270-22	Mercury	O
L362270-23	Mercury	O
L362270-24	Mercury	O
L362270-25	Mercury	O
L362270-26	Mercury	O
L362270-27	Mercury	O
L362270-28	Mercury	O
L362270-30	Mercury	O
L362270-33	Mercury	O
L362270-36	Mercury	O
L362270-38	Mercury	O
L362270-43	Mercury	O
L362270-44	Mercury	O
L362270-46	Mercury	O
L362270-48	Mercury	O
L362270-52	Mercury	O
L362270-54	Mercury	J30
L362270-56	TCLP Extraction	W2

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
0	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
J3	The associated batch QC was outside the established quality control range for precision.
W2	(ESC) - Insufficient sample amount to perform method as required. Sample amount approved per client instruction.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-01, -02, -03

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:22:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381265

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	99.9	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-08, -10, -13, -05, -06, -12, -04, -07, -11, -09

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:30:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381266

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-18, -16, -20, -19, -22, -17, -23, -21, -14, -15

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:37:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381267

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-25, -26, -27, -30, -28, -32, -24, -31, -29, -33

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:45:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381268

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-34, -43, -37, -38, -39, -41, -35, -36, -40, -42

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 11:42:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381269

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-44, -47, -46, -51, -52, -53, -48, -45, -50, -49

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 11:46:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381270

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-60, -59, -61, -62, -54, -57, -58, -55

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 11:50:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381271

EPA ID: TN00003

Method Blank

Analyte	CAS	Results
Total Solids		0.00

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-01, -02, -03

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:22:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381265

EPA ID: TN00003

Sample Duplicate

L362330-07

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	87.0	87.1	0.1	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-08, -10, -13, -05, -06, -12, -04, -07, -11, -09

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:30:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381266

EPA ID: TN00003

Sample Duplicate

L362270-13

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	94.8	94.6	0.2	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-18, -16, -20, -19, -22, -17, -23, -21, -14, -15

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:37:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381267

EPA ID: TN00003

Sample Duplicate

L362270-23

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	88.3	88.4	0.1	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-25, -26, -27, -30, -28, -32, -24, -31, -29, -33

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 10:45:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381268

EPA ID: TN00003

Sample Duplicate

L362270-33

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	89.7	88.4	1.5	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-34, -43, -37, -38, -39, -41, -35, -36, -40, -42

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 11:42:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381269

EPA ID: TN00003

Sample Duplicate

L362270-43

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	99.3	99.3	0.0	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-44, -47, -46, -51, -52, -53, -48, -45, -50, -49

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 11:46:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381270

EPA ID: TN00003

Sample Duplicate

L362270-53

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	92.2	93.2	1.1	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test: Total Solids by Method 2540G

L362270

Matrix: Soil - mg/kg

Project: Finley

Login No: L362270

Sample Number: L362270-60, -59, -61, -62, -54, -57, -58, -55

Sample Date: 8/4/2008

Extraction Date: 9/3/2008

Analysis Date: 9/4/2008 11:50:00 AM

Instrument ID: BAL

Analyst: 229

Analytic Batch: WG381271

EPA ID: TN00003

Sample Duplicate

L362270-54

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Total Solids	88.7	88.0	0.8	5	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-12, -16, -17, -10, -02, -03, -06, -09, -05, -13, -04, -08, -14, -18, -01, -07, -11, -15

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/1/2008 2:10:00 PM

Instrument ID:CVAA2

Analyst:253

Analytic Batch:WG380568

EPA ID: TN00003

Method Blank

Analyte	CAS	PQL
Mercury		<0.020

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	8.77	9.69	110	71.6 - 127.7	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-32, -24, -23, -27, -31, -30, -19, -21, -22, -25, -28, -29, -34, -20, -33, -36, -26, -35

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/2/2008 12:29:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380569

EPA ID: TN00003

Method Blank

Analyte	CAS	PQL
Mercury		<0.020

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	8.77	9.08	104	71.6 - 127.7	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-38, -39, -40, -44, -52, -53, -48, -37, -43, -47, -49, -54, -42, -51, -41, -46, -45, -50

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/1/2008 5:54:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380570

EPA ID: TN00003

Method Blank

Analyte	CAS	PQL
Mercury		<0.020

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	8.77	10.6	121	71.6 - 127.7	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-57, -61, -58, -55, -62, -59, -60

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/3/2008 4:25:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380571

EPA ID: TN00003

Method Blank

Analyte	CAS	PQL
Mercury		<0.020

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	8.77	7.88	89.9	71.6 - 127.7	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7470A

L362270

Matrix:Water - mg/L

Project:Finley

Login No:L362270

Sample Number:L362270-56

Sample Date:8/4/2008

Extraction Date:8/29/2008

Analysis Date:9/1/2008 3:18:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380732

EPA ID: TN00003

Method Blank

Analyte	CAS	PQL
Mercury		<0.0002

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	0.0030	0.0026	87.7	85 - 115	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-12, -16, -17, -10, -02, -03, -06, -09, -05, -13, -04, -08, -14, -18, -01, -07, -11, -15

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/1/2008 2:10:00 PM

Instrument ID:CVAA2

Analyst:253

Analytic Batch:WG380568

EPA ID: TN00003

Sample Duplicate

L362270-01

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Mercury	0.000	0.000			

Matrix Spike/Matrix Spike Duplicate

L362270-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Mercury	0.250	0.000	0.320	128	0.275	110	70-130		15	20	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-32, -24, -23, -27, -31, -30, -19, -21, -22, -25, -28, -29, -34, -20, -33, -36, -26, -35

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/2/2008 12:29:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380569

EPA ID: TN00003

Sample Duplicate

L362270-36

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Mercury	0.000	0.000			

Matrix Spike/Matrix Spike Duplicate

L362270-36

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Mercury	0.250	0.000	0.260	104	0.255	102	70-130		1.9	20	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-38, -39, -40, -44, -52, -53, -48, -37, -43, -47, -49, -54, -42, -51, -41, -46, -45, -50

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/1/2008 5:54:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380570

EPA ID: TN00003

Sample Duplicate

L362270-54

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Mercury	0.000	0.000			

Matrix Spike/Matrix Spike Duplicate

L362270-54

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Mercury	0.250	0.000	0.322	129	0.180	72.0	70-130		57	20	J3



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7471

L362270

Matrix:Soil - mg/kg

Project:Finley

Login No:L362270

Sample Number:L362270-57, -61, -58, -55, -62, -59, -60

Sample Date:8/4/2008

Extraction Date:8/28/2008

Analysis Date:9/3/2008 4:25:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380571

EPA ID: TN00003

Sample Duplicate

L361932-03

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Mercury	0.000	0.000			

Matrix Spike/Matrix Spike Duplicate

L361932-03

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Mercury	0.250	0.000	0.232	92.8	0.243	97.2	70-130		4.6	20	



Environmental Science Corporation

Quality Control Summary Portnoy Environmental

Test:Mercury by Method 7470A

L362270

Matrix:Water - mg/L

Project:Finley

Login No:L362270

Sample Number:L362270-56

Sample Date:8/4/2008

Extraction Date:8/29/2008

Analysis Date:9/1/2008 3:18:00 PM

Instrument ID:CVAA3

Analyst:253

Analytic Batch:WG380732

EPA ID: TN00003

Sample Duplicate

L362078-01

Name	Sample Results	Results Duplicate	%RPD	Limit	Qualifiers
Mercury	0.0000	0.0000			

Matrix Spike/Matrix Spike Duplicate

L362078-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	Qualifier RPD	% Control Limits	Control Qualifier
Mercury	0.0030	0.0000	0.0030	99.3	0.0029	98.0	70-130	1.4	20	

Portnoy Environmental

Alternate billing information:
Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 1 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone (615) 758-5858

Phone (800) 767-5859

FAX (615) 758-5859

#7

Project Description: FINLEX City/State Collected: _____
Phone: _____ Client Project #: _____ ESC Key: PORTENVTX-WAHG
FAX: _____

Collected by: Alan Hopkins Site/Facility ID#: _____ P.O.#: _____

Collected by (signature): Alan Hopkins
Packed on Ice N Y

Rush? (Lab MUST Be Notified)
 Same Day.....200%
 Next Day.....100%
 Two Day.....50%

Date Results Needed:
 Email? No Yes
 FAX? No Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Mercury Total Solids	Analysis/Container/Preservative		QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
FCSS-0710:0	GRAB	SOL		8/4/08		1	11010			X	L362270-01	
FCSS-0710:12						1				X	-02	
FCSS-0711:0						1				X	-03	
FCSS-0711:12						1				X	-04	
FCSS-0712:0						1				X	-05	
FCSS-0712:12						1				X	-06	
FCSS-0808:0						1				X	-07	
FCSS-0808:12						1				X	-08	
FCSS-0809:0						1				X	-09	

*Matrix SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <u>C.K. Johnson</u>	Date: <u>8/5/08</u>	Time: <u>0800</u>	Received by: (Signature) <u>[Signature]</u>	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition (lab use only) <u>[Signature]</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: _____	Time: _____	Received by: (Signature) <u>[Signature]</u>	Temp: <u>21.5</u>	Bottles Returned: <u>8/5/08</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: _____	Time: _____	Received by: (Signature) <u>[Signature]</u>	Date: <u>8/5/08</u>	Time: <u>0800</u>
				pH Checked: _____	NGP: _____

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 2 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone (615) 758-5858

Phone (800) 767-5859

FAX (615) 758-5859

Project

Description: **FINLEY**

City/State
Collected

Phone:

FAX:

Client Project #:

ESC Key:

PORTENVTX- WAHG

Collected by:

ALAN HOPKINS

Site/Facility ID#:

P.O.#:

Collected by (signature):

Alan Hopkins

Rush? (Lab MUST Be Notified)

___ Same Day..... 200%
___ Next Day..... 100%
___ Two Day..... 50%

Date Results Needed:

Email? ___ No ___ Yes

FAX? ___ No ___ Yes

No.
of
Ctrs

Packed on Ice N

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	Mercury Total Solids	QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
FCSS - 0809:12	GRAB	SOIL		8/4/08			X	L362270 -10	
FCSS - 0810:0							X	-11	
FCSS - 0810:12							X	-12	
FCSS - 0811:0							X	-13	
FCSS - 0811:12							X	-14	
FCSS - 0812:0							X	-15	
FCSS - 0812:12							X	-16	
FCSS - 0907:0							X	-17	
FCSS - 0907:12							X	-18	

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>C.K. V...</i>	Date: 8/5/08	Time: 0800	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: <i>21.5</i>	Bottle Received: <i>8/5/08</i>
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: <i>8/5/08</i>	Time: <i>0900</i>

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 3 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone (615) 758-5858

Phone (800) 767-5859

FAX (615) 758-5859

Project Description: **F5WLEK**

City/State Collected

Phone:

Client Project #:

ESC Key:

PORTENVTX-WAHG

FAX:

Collected by: **ALAN HOPKINS**

Site/Facility ID#:

P.O.#:

Collected by (signature):

Alan Hopkins

Rush? (Lab MUST Be Notified)

___ Same Day..... 200%

___ Next Day..... 100%

___ Two Day..... 50%

Date Results Needed:

Email? ___ No ___ Yes

FAX? ___ No ___ Yes

No.

of

Cntrs

Packed on Ice N Y

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Mercury - Total Solids	QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
F5SS-0908:0	GRAB	SOIL		8/4/08		1	X	X	L362270 -19	
F5SS-0908:12							X	X	-20	
F5SS-0909:0							X	X	-21	
F5SS-0909:02							X	X	-22	
F5SS-0910:0							X	X		
F5SS-0910:0.5							X	X		
F5SS-0910:12							X	X	-23	
F5SS-0911:0							X	X		
F5SS-0911:12							X	X	-24	

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>C.K. V...</i>	Date: 8/5/08	Time: 09:00	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/> _____	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: <i>24°C</i>	Bottles Received: <i>18</i>
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: <i>8/5/08</i>	Time: <i>09:00</i>
				pH Checked: <i>18</i>	NC: <i>0/0</i>

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 4 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

Project Description: **FINLEY** City/State Collected: _____
Phone: _____ Client Project #: _____ ESC Key: **PORTENVTX-WAHG**
FAX: _____

Collected by: **ALAN HOPKINS** Site/Facility ID#: _____ P.O.#: _____

Collected by (signature): *Alan Hopkins*
Packed on Ice N **Rush?** (Lab MUST Be Notified)
 Same Day.....200%
 Next Day.....100%
 Two Day.....50%
 Date Results Needed:
 Email? No Yes
 FAX? No Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs
FCSS-1006:0	GRAB	SOIL		8/14/08		1
FCSS-1006:12						
FCSS-1007:0						
FCSS-1007:12						
FCSS-1008:0						
FCSS-1008:12						
FCSS-1009:0						
FCSS-1009:0.5						
FCSS-1009:12						

Mercury	Totals	Soils	EDD
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X
X	X	X	X

CoCode: portenvtx (lab use only)
Template: P10gin
Shipped via:

Remarks/Contaminant	Sample # (lab only)
X L36270 -25	
X -26	
X -27	
X -28	
X -29	
X -30	
X	
X	
X -31	

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>C.K. Nelson</i>	Date: 8/14/08	Time: 0800	Received by: (Signature)	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: <i>24.1</i> Bottles Received: <i>50-200</i>	
Relinquished by: (Signature)	Date:	Time:	Received to lab by: (Signature)	Date: 8/18/08 Time: 0900	pH Checked: _____ NCF: _____

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Neison

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 5 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
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Phone (615) 758-5858

Phone (800) 767-5859

FAX (615) 758-5859

Project Description: **FINLEY**

City/State Collected

Phone:

Client Project #:

ESC Key:

PORTENVTX- WAHG

FAX:

Collected by:

ALAN HOPKINS

Site/Facility ID#:

P.O.#:

Collected by (signature):

Alan Hopkins

Rush? (Lab MUST Be Notified)

___ Same Day.....200%

___ Next Day.....100%

___ Two Day.....50%

Date Results Needed:

Email? ___No___Yes

FAX? ___No___Yes

No. of Cntrs

Packed on Ice N

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	Mercury Total Solids	QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
FCSS-1010'0	GRAB	SOIL		8/4/08		1	X	L36270	1010'0
FCSS-1010'0.5							X		
FCSS-1010'12							X		
FCSS-1010'24							X	-32	
FCSS-1010'36							X	-33	
FCSS-1011'0							X		
FCSS-1011'0.5							X		
FCSS-1011'12							X		
FCSS-1105'0							X	-34	
							X	-35	

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>C.K. [Signature]</i>	Date: 8/5/08	Time: 0800	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: <i>70</i>	Bottles Received: <i>24</i>
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: <i>8/6/08</i>	Time: <i>0900</i>
				Checked: <i>[Signature]</i>	NCP: <i>[Signature]</i>

Portnoy Environmental

Alternate billing information:
Direct Bill to
Mark Nelson

Analysis/Container/Preservative

Chain of Custody
Page 6 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

Project Description: **FINLEY**

City/State Collected

Phone:

Client Project #:

ESC Key:

PORTENVTX-WAHG

FAX:

Collected by: **A. HOPKINS**

Site/Facility ID#:

P.O.#:

Collected by (signature):

Rush? (Lab MUST Be Notified)

Date Results Needed:

- Same Day.....200%
- Next Day.....100%
- Two Day.....50%

Email? No Yes

FAX? No Yes

Packed on Ice N Y

Sample ID	Comp/Grab	Matrix*	Depth	Date		No. of Cntrs	Mercury, Total Solids	QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
					Time					
FCSS - 1105:12	GRAB	SOIL		8-4-08		1	X	X	L36270	-36
FCSS - 1106:0						1	X	X		
FCSS - 1106:12						1	X	X		
FCSS - 1106:12.5						1	X	X		
FCSS - 1107:0						1	X	X		
FCSS - 1107:12						1	X	X		-37
FCSS - 1108:0						1	X	X		-38
FCSS - 1108:12						1	X	X		-39
FCSS - 1109:0						1	X	X		-40

*Matrix SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature)	Date: 8-5-08	Time: 0800	Received by: (Signature)	Samples returned via: <input type="checkbox"/> UPS	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	<input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Temp: 21.1	Bottles Received: 27
				Date: 8/5/08	Time: 2:00
				pH Checked:	NCF

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 7 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

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Phone (615) 758-5858

Phone (800) 767-5859

FAX (615) 758-5859

Project Description: **FINLEY**

City/State Collected

Phone:
FAX:

Client Project #:

ESC Key:

PORTENVTX-WAHG

Collected by: **ALAN HOPKINS**

Site/Facility ID#:

P.O.#:

Collected by (signature):

Alan Hopkins

Rush? (Lab MUST Be Notified)

- ___ Same Day.....200%
- ___ Next Day.....100%
- ___ Two Day.....50%

Date Results Needed:

Email? ___ No ___ Yes

FAX? ___ No ___ Yes

No. of Cntrs

Packed on Ice N (Y)

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	Mercury, Total Solids	QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
FCSS-1109:12	GRAB	SOIL		8/4/08		X	X	L362270 -41	
FCSS-1110:0						X	X		
FCSS-1110:12						X	X		
FCSS-1205:0						X	X		
FCSS-1205:12						X	X		
FCSS-1206:0						X	X		
FCSS-1206:12						X	X		
FCSS-1207:0						X	X		
FCSS-1207:12						X	X		

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>C.K. Underwood</i>	Date: 8/5/08	Time: 6:00	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: <i>21.1</i>	Bottles Received: <i>58</i>
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 8/5/08	Time: 6:00
				pH Checked:	NCF:

Portnoy Environmental

Alternate billing information:
Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 8 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

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Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

Project Description: **FINLEY**

Phone:

FAX:

Client Project #:

ESC Key:

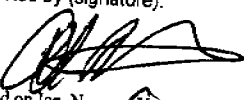
PORTENVTX- WAHG

Collected by: **A. HOPKINS**

Site/Facility ID#:

P.O.#:

Collected by (signature):



Rush? (Lab MUST Be Notified)

- Same Day 200%
- Next Day 100%
- Two Day 50%

Date Results Needed:

Email? No Yes

FAX? No Yes

Mercury/Totalsolids

HOLD

QC2MOD / EDD

CoCode: portenv (lab use only)
Template/PrctgIn
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date		No. of Cntrs	Mercury/Totalsolids	Other	Other	QC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
				Date	Time							
FCSS-1208:0	GLAB	SOIL		8/4/08		1	X			X	136270	-49
FCSS-1208:12						1	X			X		-50
FCSS-1209:0						1	X			X		-51
FCSS-1209:12						1	X			X		-52
FCSS-1210:0						1	X			X		-53
FCSS-1210:12						1	X			X		-54
FCSS-RA1:0						1	X			X		
FCSS-RA1:0.5						1	X			X		
FCSS-RA1:12						1	X			X		-55

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date: 8/5/08	Time: 0800	Received by: (Signature)	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Condition: (lab use only)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 24.4	Bottles Recalled: 0
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8/5/08	Time: 0900
				Checked: <input type="checkbox"/>	NCP: <input type="checkbox"/>

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 9 of 10

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
Mt Juliet, TN 37122

Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

Project Description: **FINLEY** City/State Collected: _____
Phone: _____ Client Project #: _____ ESC Key: **PORTENVX-WAHG**
FAX: _____

Collected by: **ALAN HOPKINS** Site/Facility ID#: _____ P.O.#: _____

Collected by (signature): *Alan Hopkins*
Packed on Ice **N** (Y) **Rush?** (Lab MUST Be Notified)
 Same Day.....200%
 Next Day.....100%
 Two Day.....50%
 Date Results Needed:
 Email? No Yes
 FAX? No Yes

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Merch	Total Solids	Analysis	Container	Preservative	QC2MOD / EDD	CoC (lab use only)	
													Remarks/Contaminant	Sample # (lab only)
FCSS - RA1:24	GRAB	SOIL		8/4/08		1	X					X	L362010	-56
FCSS - RA1:36							X					X		-57
FCSS - RA2:0							X					X		
FCSS - RA2:0.5							X					X		
FCSS - RA2:12							X					X		-58
FCSS - RA2:24							X					X		
FCSS - RA2:36							X					X		-59
FCSS - RA3:0							X					X		
FCSS - RA3:0.5							X					X		

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>C.K. Underwood</i>	Date: 8/5/08	Time: 0800AM	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Condition: _____
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature) <i>[Signature]</i>	Temp: _____ Bottles Received: _____	Condition: _____
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 8/6/08	Time: 0700
				pH Checked: _____	NOF: _____

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to:

Email to:

Analysis/Container/Preservative

Chain of Custody
Page 10 of 10

Prepared by:

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SCIENCE CORP.**

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

Project Description: **FINLEY** City/State Collected
Phone: Client Project #: ESC Key: **PORTENVTX- WAHG**
FAX:

Collected by: **A. HOPKINS** Site/Facility ID#: P.O.#:

Collected by (signature): *[Signature]* **Rush?** (Lab MUST Be Notified)
 Same Day.....200%
 Next Day.....100%
 Two Day.....50%
 Date Results Needed:
 Email? No Yes
 FAX? No Yes
 Packed on Ice N Y

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Mercury	Total Solids	OC2MOD / EDD	Remarks/Contaminant	Sample # (lab only)
FCSS-RA3:12	GRAB	SOIL		8/4/08		1	X		X	Lab 136270 - 60	
FCSS-RA3:24						1	X		X		
FCSS-RA4:0						1	X		X		
FCSS-RA4:0.5						1	X		X		
FCSS-RA4:12						1	X		X	-61	
FCSS-RA4:24						1	X		X		
FCSS-RA4:36						1	X		X	-62	
FCSS						1			X		
FCSS						1			X		

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Remarks:

Flow _____ Other _____

Relinquished by: (Signature) <i>[Signature]</i>	Date: 8-5-08	Time: 0800	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> UPS <input type="checkbox"/> Courier	Condition: (lab use only)
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature) <i>[Signature]</i>	Temp: 78°F	Botl. Recv. <i>[Signature]</i>
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 8/6/08	Time: 0900



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Tax I.D. 62-0814289

Est. 1970

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660

Houston, TX 77077

Report Summary

Thursday August 28, 2008

Report Number: L359016

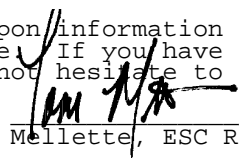
Samples Received: 08/08/08

Client Project:

Description: Washington State

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Tom Mellette, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 09227, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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27 Samples Reported: 08/26/08 15:21 Revised: 08/28/08 14:16

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0910:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-01

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.6		97.6		%	2540G	08/14/08
Mercury	0.56	0.20	0.58	0.20	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 08/26/08 15:21 Revised: 08/28/08 14:16



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0910:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-02

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.6		98.6		%	2540G	08/14/08
Mercury	0.40	0.20	0.40	0.20	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 08/26/08 15:21 Revised: 08/28/08 14:16



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Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-0911:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-03

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.5		96.5		%	2540G	08/14/08
Mercury	0.36	0.20	0.37	0.21	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 08/26/08 15:21 Revised: 08/28/08 14:16



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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1009:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-04

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.8		96.8		%	2540G	08/14/08
Mercury	8.1	0.40	8.4	0.41	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 08/26/08 15:21 Revised: 08/28/08 14:16



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1009:0.3
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-05

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.5		96.5		%	2540G	08/14/08
Mercury	7.0	0.40	7.3	0.41	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1010:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-06

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.6		97.6		%	2540G	08/14/08
Mercury	35.	2.0	36.	2.0	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1010:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-07

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	94.7		94.7		%	2540G	08/14/08
Mercury	33.	2.0	35.	2.1	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1010:0.24
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-08

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	81.5		81.5		%	2540G	08/14/08
Mercury	BDL	0.20	BDL	0.24	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1011:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-09

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	94.6		94.6		%	2540G	08/14/08
Mercury	4.1	0.20	4.3	0.21	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1011:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-10

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.9		95.9		%	2540G	08/14/08
Mercury	3.7	0.20	3.8	0.21	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1106:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-11

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	98.8		98.8		%	2540G	08/14/08
Mercury	BDL	0.20	BDL	0.20	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1106:12
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-12

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	85.7		85.7		%	2540G	08/14/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1106:12.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-13
Site ID : FINLEY
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.5		87.5		%	2540G	08/14/08
Mercury	BDL	0.20	BDL	0.23	mg/kg	7471	08/22/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1109:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-14

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.8		95.8		%	2540G	08/14/08
Mercury	19.	2.0	20.	2.1	mg/kg	7471	08/26/08

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
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August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-1110:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-15

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.8		96.8		%	2540G	08/14/08
Mercury	19.	1.0	20.	1.0	mg/kg	7471	08/22/08

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
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August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA1:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-16

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	99.0		99.0		%	2540G	08/14/08
Mercury	0.87	0.20	0.88	0.20	mg/kg	7471	08/22/08

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA1:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-17

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	99.2		99.2		%	2540G	08/14/08
Mercury	2.2	0.20	2.2	0.20	mg/kg	7471	08/22/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA1:24
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-18

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	93.9		93.9		%	2540G	08/14/08
Mercury	56.	8.0	59.	8.5	mg/kg	7471	08/22/08

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA2:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-19

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	99.3		99.3		%	2540G	08/14/08
Mercury	4.3	0.20	4.3	0.20	mg/kg	7471	08/21/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA2:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-20

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.9		97.9		%	2540G	08/14/08
Mercury	4.5	0.20	4.6	0.20	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA2:24
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-21

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	83.8		83.8		%	2540G	08/14/08
Mercury	BDL	0.20	BDL	0.24	mg/kg	7471	08/21/08

BDL - Below Detection Limit

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA3:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-22

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.3		95.3		%	2540G	08/14/08
Mercury	3.6	0.20	3.8	0.21	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA3:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-23

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.2		95.2		%	2540G	08/14/08
Mercury	3.2	0.20	3.4	0.21	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA3:24
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-24

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	83.9		83.9		%	2540G	08/14/08
Mercury	3.0	0.20	3.6	0.24	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA4:0
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-25
Site ID : FINLEY
Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	96.3		96.3		%	2540G	08/14/08
Mercury	4.3	0.20	4.4	0.21	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA4:0.5
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-26

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	95.0		95.0		%	2540G	08/14/08
Mercury	4.1	0.20	4.4	0.21	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

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REPORT OF ANALYSIS

Alan Hopkins
Portnoy Environmental
1880 S Dairy Ashford Ste 660
Houston, TX 77077

August 28, 2008

Date Received : August 08, 2008
Description : Finley
Sample ID : FCSS-RA4:24
Collected By : Alan Hopkins
Collection Date : 08/04/08 00:00

ESC Sample # : L359016-27

Site ID : FINLEY

Project # :

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	83.7		83.7		%	2540G	08/14/08
Mercury	BDL	0.20	BDL	0.24	mg/kg	7471	08/21/08

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 08/26/08 15:21 Revised: 08/28/08 14:16

Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L359016-08	Mercury	O
L359016-11	Mercury	O
L359016-12	Mercury	O
L359016-13	Mercury	O
L359016-18	Mercury	VJ3
L359016-21	Mercury	O
L359016-27	Mercury	O

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
J3	The associated batch QC was outside the established quality control range for precision.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
08/28/08 at 14:16:55

TSR Signing Reports: 690
R5 - Desired TAT

Sample: L359016-01 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Refer to L362270.
Sample: L359016-02 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-03 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-04 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-05 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-06 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-07 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-08 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-09 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-10 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-11 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-12 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-13 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-14 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-15 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-16 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-17 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-18 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Relogged to L362270-56.
Sample: L359016-19 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-20 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-21 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-22 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-23 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-24 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-25 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-26 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21
Sample: L359016-27 Account: PORTENVTX Received: 08/08/08 09:00 Due Date: 08/18/08 00:00 RPT Date: 08/26/08 15:21

ATTACHMENT C

**PERFORMANCE SAMPLE
LABORATORY ANALYTICAL REPORTS**





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Est. 1970

Alan Hopkins and NWPL Team
Portnoy Environmental
1414 W. Sam Houston Pkwy. N., Suite 170
Houston, TX 77043

Report Summary

Tuesday September 13, 2011

Report Number: L535343

Samples Received: 09/10/11

Client Project: FINLEY

Description: Finley

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Tom Mellette , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-0909/1008:12
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-01
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	84.		84.		%	2540G	09/13/11
Mercury	0.051	0.020	0.061	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

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 Houston, TX 77043

September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-0909/1008:12.5
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-02
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	84.		84.		%	2540G	09/13/11
Mercury	BDL	0.020	BDL	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-0910/0911/18
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-03
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	85.		85.		%	2540G	09/13/11
Mercury	0.077	0.020	0.090	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1009:24
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-04
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	82.		82.		%	2540G	09/13/11
Mercury	0.16	0.020	0.20	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1010:42
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-05

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.		87.		%	2540G	09/13/11
Mercury	BDL	0.020	BDL	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1011:12
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-06
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.		87.		%	2540G	09/13/11
Mercury	0.031	0.020	0.035	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1012:12
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-07
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	84.		84.		%	2540G	09/13/11
Mercury	0.15	0.020	0.18	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1012/1111:6
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-08
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	85.		85.		%	2540G	09/13/11
Mercury	0.057	0.020	0.067	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1012/1111:6.5
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-09

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.		86.		%	2540G	09/13/11
Mercury	0.023	0.020	0.027	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1107/1207:6
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-10
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.		86.		%	2540G	09/13/11
Mercury	0.028	0.020	0.032	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-108:12
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-11
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	84.		84.		%	2540G	09/13/11
Mercury	0.050	0.020	0.060	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
 Note:
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REPORT OF ANALYSIS

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 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1108/1208:18
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-12
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	87.		87.		%	2540G	09/13/11
Mercury	0.10	0.020	0.12	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1109:24
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-13
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	83.		83.		%	2540G	09/13/11
Mercury	0.72	0.040	0.86	0.048	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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 Portnoy Environmental
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 Houston, TX 77043

September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1110:12
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-14
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	97.		97.		%	2540G	09/13/11
Mercury	0.060	0.020	0.062	0.020	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1111/1210:6
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-15
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	85.		85.		%	2540G	09/13/11
Mercury	0.023	0.020	0.027	0.024	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

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REPORT OF ANALYSIS

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September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1208:12
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-16

Site ID : FINLEY

Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.		86.		%	2540G	09/13/11
Mercury	BDL	0.020	BDL	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit

RDL - Detection Limit- Estimated Quantitation Limit(EQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 09/13/11 12:27 Printed: 09/13/11 12:27



12065 Lebanon Rd.
 Mt. Juliet, TN 37122
 (615) 758-5858
 1-800-767-5859
 Fax (615) 758-5859
 Tax I.D. 62-0814289
 Est. 1970

REPORT OF ANALYSIS

Alan Hopkins and NWPL Team
 Portnoy Environmental
 1414 W. Sam Houston Pkwy. N., Suite
 Houston, TX 77043

September 13, 2011

Date Received : September 10, 2011
 Description : Finley
 Sample ID : FC-1209/1308:6
 Collected By : A. Hopkins
 Collection Date : 09/09/11 00:00

ESC Sample # : L535343-17
 Site ID : FINLEY
 Project # : FINLEY

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	86.		86.		%	2540G	09/13/11
Mercury	0.15	0.020	0.17	0.023	mg/kg	7471	09/12/11

BDL - Below Detection Limit
 RDL - Detection Limit- Estimated Quantitation Limit(EQL)
 Note:
 The reported analytical results relate only to the sample submitted.
 This report shall not be reproduced, except in full, without the written approval from ESC.
 Reported: 09/13/11 12:27 Printed: 09/13/11 12:27

Summary of Remarks For Samples Printed
09/13/11 at 12:27:57

TSR Signing Reports: 690
R2 - Rush: Next Day

See Tom M prior to all non Template logins for special notes if any. Tom M cell 406-3470

Sample: L535343-01 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
shipping \$ 9/9 email from kelli
Sample: L535343-02 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-03 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-04 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-05 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-06 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-07 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-08 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-09 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-10 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-11 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-12 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-13 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-14 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-15 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-16 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27
Sample: L535343-17 Account: PORTENVTX Received: 09/10/11 09:00 Due Date: 09/13/11 00:00 RPT Date: 09/13/11 12:27



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YOUR LAB OF CHOICE

Quality Control Summary
SDG: L535343
Portnoy Environmental

Test:	Total Solids by Method 2540G	Matrix:	Soil - mg/kg
Project No:	FINLEY	EPA ID:	TN00003
Project:	Finley	Analytic Batch:	WG554692
Collection Date:	9/9/2011	Analyst:	487
Analysis Date:	9/13/2011 9:01:00 AM	Extraction Date:	9/12/2011
Instrument ID:	LOGBAL1		
Sample Numbers:	L535343-03, -04, -02, -01, -06, -05		

Method Blank

Analyte	CAS	PQL	Qualifiers
Total Solids		<0.100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100	85 - 155	



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YOUR LAB OF CHOICE

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Total Solids by Method 2540G		
Project No:	FINLEY	Matrix:	Soil - mg/kg
Project:	Finley	EPA ID:	TN00003
Collection Date:	9/9/2011	Analytic Batch:	WG554693
Analysis Date:	9/13/2011 9:06:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	9/12/2011
Sample Numbers:	L535343-08, -12, -13, -07, -11, -14, -10, -15, -09, -16		

Method Blank

Analyte	CAS	PQL	Qualifiers
Total Solids		<0.100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 155	



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YOUR LAB OF CHOICE

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Total Solids by Method 2540G		
Project No:	FINLEY	Matrix:	Soil - mg/kg
Project:	Finley	EPA ID:	TN00003
Collection Date:	9/9/2011	Analytic Batch:	WG554694
Analysis Date:	9/13/2011 9:14:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	9/12/2011
Sample Numbers:	L535343-17		

Method Blank

Analyte	CAS	PQL	Qualifiers
Total Solids		<0.100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100	85 - 155	



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YOUR LAB OF CHOICE

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Total Solids by Method 2540G	Matrix:	Soil - mg/kg
Project No:	FINLEY	EPA ID:	TN00003
Project:	Finley	Analytic Batch:	WG554692
Collection Date:	9/9/2011	Analyst:	487
Analysis Date:	9/13/2011 9:01:00 AM	Extraction Date:	9/12/2011
Instrument ID:	LOGBAL1		
Sample Numbers:	L535343-03, -04, -02, -01, -06, -05		

Sample Duplicate

L535343-06

Name	Sample Results	Duplic Results	%RPD	Limit	Qualifiers
Total Solids	86.5	87.2	0.8	5	



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YOUR LAB OF CHOICE

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Total Solids by Method 2540G		
Project No:	FINLEY	Matrix:	Soil - mg/kg
Project:	Finley	EPA ID:	TN00003
Collection Date:	9/9/2011	Analytic Batch:	WG554693
Analysis Date:	9/13/2011 9:06:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	9/12/2011
Sample Numbers:	L535343-08, -12, -13, -07, -11, -14, -10, -15, -09, -16		

Sample Duplicate

L535343-16

Name	Sample Results	Duplic Results	%RPD	Limit	Qualifiers
Total Solids	85.9	85.9	0.0	5	



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YOUR LAB OF CHOICE

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Total Solids by Method 2540G	Matrix:	Soil - mg/kg
Project No:	FINLEY	EPA ID:	TN00003
Project:	Finley	Analytic Batch:	WG554694
Collection Date:	9/9/2011	Analyst:	487
Analysis Date:	9/13/2011 9:14:00 AM	Extraction Date:	9/12/2011
Instrument ID:	LOGBAL1		
Sample Numbers:	L535343-17		

Sample Duplicate

L535343-17

Name	Sample Results	Duplic Results	%RPD	Limit	Qualifiers
Total Solids	85.5	85.8	0.4	5	

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Mercury by Method 7471		
Project No:	FINLEY	Matrix:	Soil - mg/kg
Project:	Finley	EPA ID:	TN00003
Collection Date:	9/9/2011	Analytic Batch:	WG554483
Analysis Date:	9/12/2011 3:02:00 AM	Analyst:	493
Instrument ID:	CVAA3	Extraction Date:	9/10/2011
Sample Numbers:	L535343-13, -03, -14, -05, -06, -12, -04, -01, -02, -15, -16, -17, -09, -11, -07, -08, -10		

Method Blank

Analyte	CAS	PQL	Qualifiers
Mercury		<0.020	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Mercury	3.77	3.63	96.3	71.6 - 128	



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YOUR LAB OF CHOICE

Quality Control Summary

SDG: L535343

Portnoy Environmental

Test:	Mercury by Method 7471	Matrix:	Soil - mg/kg
Project No:	FINLEY	EPA ID:	TN00003
Project:	Finley	Analytic Batch:	WG554483
Collection Date:	9/9/2011	Analyst:	493
Analysis Date:	9/12/2011 3:02:00 AM	Extraction Date:	9/10/2011
Instrument ID:	CVAA3		
Sample Numbers:	L535343-13, -03, -14, -05, -06, -12, -04, -01, -02, -15, -16, -17, -09, -11, -07, -08, -10		

Sample Duplicate

L535334-01

Name	Sample Results	Duplic Results	%RPD	Limit	Qualifiers
Mercury	0.023	0.023	1.7	20	

Matrix Spike/Matrix Spike Duplicate

L535334-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Mercury	0.250	0.023	0.255	92.8	0.287	106	70-130		12	20	

Portnoy Environmental

Alternate billing information:
 Direct Bill to
 Mark Nelson

Report to:
 Alan Hopkins

Email to:
 Ahopkins@pei-tx.com

Analysis/Container/Preservative

Prepared by:

**ENVIRONMENTAL
 SCIENCE CORP.**

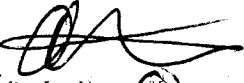
12065 Lebanon Road
 Mt. Juliet, TN 37122

Phone (615) 758-5858
 Phone (800) 767-5859
 FAX (615) 758-5859

Project Description: **FINLEY** City/State Collected:

Phone: Client Project #: **FINLEY** ESC Key: **PORTENVTX- WAHG**

FAX: Site/Facility ID#: **FINLEY** P.O.#: **547154-RXG99**

Collected by: **A. HOPKINS** Collected by (signature): 

Rush? (Lab MUST Be Notified) Date Results Needed: **9-13-11**

Same Day.....200% Email? No Yes

Next Day.....100% FAX? No Yes

Two Day.....50%

Packed on Ice N

TOTAL Hg
~~XXXXXXXXXX~~

All samples need QC2MOD, TS and EDD

CoCode portenvtx (lab use only)
 Template/Prelogin
 Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Remarks/Contaminant	Sample # (lab only)
FC-1107/1207:6	GLAB	SOIL		9-9-11		1		CS35343-10
1108:12						1		-11
1108/1208:18						1		-12
1109:24						1		-13
1110:12						1		-14
1111/1210:6						1		-15
1208:12						1		-16
1209/1308:6						1		-17







*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Remarks:

NEED 9-13-11

Flow _____ Other _____

Relinquished by: (Signature) 	Date: 9-9-11	Time: 1200	Received by: (Signature) 	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/> _____	Condition: (lab use only)
Relinquished by: (Signature) 	Date:	Time:	Received by: (Signature) 	Temp: Amb.	Bottles Received: 17 202
Relinquished by: (Signature) 	Date:	Time:	Received for lab by: (Signature) 	Date: 9/10/11	Time: 0900
				pH Checked:	NCF:

Portnoy Environmental

Alternate billing information:

Direct Bill to
Mark Nelson

Report to: Alan Hopkins

Email to: Ahopkins@pei-tx.com

Analysis/Container/Preservative

Chain of Custody
Page 1 of 2

Prepared by:

**ENVIRONMENTAL
SCIENCE CORP.**

12065 Lebanon Road
Mt. Juliet, TN 37122

Phone (615) 758-5858

Phone (800) 767-5859

FAX (615) 758-5859

F029

Project Description: **FINLEY**

City/State Collected

Phone:
FAX:

Client Project #:

FINLEY

ESC Key:

PORTENVTX- WAHG

Collected by: **A. HOPKINS**

Site/Facility ID#:

FINLEY

P.O.#:

547154-RXG99

Collected by (signature):

[Signature]

Rush? (Lab MUST Be Notified)

___ Same Day.....200%
___ Next Day.....100%
___ Two Day.....50%

Date Results Needed:

9-13-11

Email? ___No___Yes

FAX? ___No___Yes

No.

of

Cntrs

All samples need QC2MOD, TS and EDD

TOTAL 14

CoCode portenvtx (lab use only)

Template/Prelogin

Shipped Via:

Remarks/Contaminant

Sample # (lab only)

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Remarks/Contaminant	Sample # (lab only)
FC- 0909/1008:12	GWA	SOIL		9-9-11		1		L 555543-01
0909/1008:12.5								02
0910/0911/18								03
1009:24								04
1010:42								05
1011:12								06
1012:12								07
1012/1111:6								08
1012/1111:6.5								09

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

Remarks:

NEED 9-13-11

7975-032

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature) <i>[Signature]</i>	Date: 9-9-11	Time: 1200	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/> _____	Condition: (lab use only) OK
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received by: (Signature) <i>[Signature]</i>	Temp: Amb	Bottles Received: 17 202
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 9/10/11	Time: 0900
				pH Checked:	NCF:

ATTACHMENT D
SITE PHOTOGRAPHS



FINLEY METER STATION
VCP NO.: CE0362



1. Look at initial excavation.



2. Looking at completed excavation.

ATTACHMENT E

WASTE DISPOSAL DOCUMENTATION



WASTE MANAGEMENT, INC ...NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Graham Road Recycling and Disposal Facility

1820 S. GRAHAM ROAD, MEDICAL LAKE, WA 99022 (509) 244-0151

PERMIT # 105468WA

Tracking Number 2242

PERMIT TO DISPOSE OF NON-HAZARDOUS / NON- DANGEROUS MATERIALS
This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated _____

EXPIRES: 08/09/2012

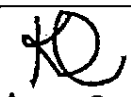
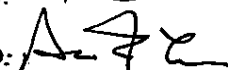
**GENERATOR: NORTHWEST PIPELINE GP-FINLEY
(CHEVRON) MS**

DESCRIPTION: MERCURY CONTAMINATED SOILS - NON-HAZARDOUS	TONS: 75
<input checked="" type="checkbox"/> SPECIAL WASTE <input type="checkbox"/> PCS	
LOCATION: 43601 S FINLEY RD WAY FINLEY, WA. 99336	COUNTY: * benton
CONTACT: ALAN HOPKINS	PHONE: 713-805-2994 FAX: 823-295-6404

BILLING: Landfill account PORTNOY ENVIRONMENTAL, INC.	PO#:	JOB#:
--	-------------	--------------

We accept business checks, cash, or charge (with prior approval)

SPECIAL HANDLING :

APPROVED:  **KRISTIN CASTNER** DATE: 08/09/11 12:18:45 PM
APPROVED:  **Alan Hopkins** 8/10/2011 Site Manager Approval #:

THERE IS A MINIMUM CHARGE OF \$50 FOR EACH LOAD OF SPECIAL WASTE



WASTE MANAGEMENT

HAZARDOUS / DANGEROUS



Graham Road Facility
 1820 S. Graham Road
 Medical Lake, WA, 99022
 Ph: (509)244-0151

Original
 Ticket# 385267

Customer Name PORTNOY ENVIRONMENTAL INC POB Carrier NRC ENVIRONMENTAL NRC
 Ticket Date 09/09/2011 Vehicle# DAN Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver DAN
 Hauling Ticket# Check#
 Route Billing # 0001273
 State Waste Code Gen EPA ID N/A
 Manifest @
 Destination Grid
 EQ 105468WA
 Profile 105468WA (MERCURY CONTAMINATED SOILS - NON-HAZARDOUS)
 Generator WA-NORTHWEST PIPELINE GP FINLE NORTHWEST PIPELINE GP - FINLEY CHEVRON MG

Time	Scale	Operator	Inbound	Gross	
In 09/09/2011 15:19:13	Scale1	JSCHRODI		Tare	73520 lb
Out 09/09/2011 15:39:15	Scale1	dbrooks		Net	40240 lb
				Tons	53280 lb
					16.64

Comments

MY SIGNATURE CERTIFIES NON-ASBESTOS DEBRIS/EXCEPT;PROPER PACKAGED- W/WSR

Product	LDK	Gty	UOM	Rate	Tax	Amount	Origin
---------	-----	-----	-----	------	-----	--------	--------



Graham Road Facility
 1820 S. Graham Road
 Medical Lake, WA, 99022
 Ph: (509)244-0151

Original
 Ticket# 266590

Customer Name PORTNOY ENVIRONMENTAL INC POR Carrier NRC ENVIRONMENTAL NRC
 Ticket Date 09/14/2011 Vehicle# DAN Volume
 Payment Type Credit Account Container
 Manual Ticket# Driver DAN
 Hauling Ticket# Check#
 Route Billing # 0001279
 State Waste Code Gen EPA ID N/A
 Manifest 0
 Destination Grid
 PO 105468WA
 Profile 105468WA (MERCURY CONTAMINATED SOILS - NON-HAZARDOUS)
 Generator WA-NORTHWEST PIPELINE GP FINLE NORTHWEST PIPELINE GP - FINLEY CHEVRON MS

	Time	Scale	Operator	Inbound	Gross	
In	09/14/2011 14:27:58	Scale1	JSCHROD1		Tare	40620 lb
Out	09/14/2011 14:41:27	Scale1	dbrooks		Net	42440 lb
					Tare	21.72

Comments

MY SIGNATURE CERTIFIES NON-ASBESTOS DEBRIS/EXCEPT:PROPER PACKAGED- W/WSR

Product	LD%	Qty	LOM	Rate	Tax	Amount	Origin
---------	-----	-----	-----	------	-----	--------	--------