Response Action Plan

Exide Technologies Undeveloped Buffer Property
Frisco, Collin County, Texas

April 1, 2014

Prepared for:

Exide Technologies

Prepared by:
Pastor, Behling & Wheeler, LLC
consulting engineers and scientists

Undeveloped Buffer Property VCP Investigation
Response Action Plan

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) VCP ID No. 2541
check one: X Initial submittal for this on-site property ___ Subsequent submittal for this on-site property
Report date: April 1, 2014 TCEQ Region No.: 4

TCEQ Program (check one)

[ ] Corrective Action (Mail Code 127)
[X] Voluntary Cleanup Program (Mail Code 221)
[ ] RPR Section (Mail Code 137)
[ ] Superfund PRP Lead (Mail Code 143)
[ ] Municipal Solid Waste Permits (Mail Code 124)

treat

On-Site Property Name: Exide Technologies Undeveloped Buffer Property
Street no. 7471 Pre dir: So Street name 5th Street type: Street Post dir:
City: Frisco County: Collin County Code: 43 Zip: 75034
Nearest street intersection or location description: Undeveloped land located around the former Exide Technologies Frisco Recycling Center, near the intersection of Parkwood Drive and Eagan Way/So. 5th Street.

Latitude: ~~Degrees, Minutes, Seconds~~ OR **Decimal Degrees** (circle one) North 33.14199
Longitude: ~~Degrees, Minutes, Seconds~~ OR **Decimal Degrees** (circle one) West -96.82507

Off-Site Affected Property Information

Off-Site Affected Property Name:
Physical Address: NA
Street no. Pre dir: Street name Street type: Post dir:
City: County: County Code: Zip:

[X] Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Exide Technologies
Contact Person: Matthew A. Love Title: Director, Global Environmental Remediation
Mailing Address: 3000 Montrose Ave
City: Reading State: PA Zip: 19605 E-mail address matt.love@exide.com
Phone: 610-921-4054 Fax: 610-921-4063

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person Matthew A. Love Name, print: MATTHEW A. LOVE Date: 3/31/14

RAP Executive Summary	ID No.: 2541
	Report Date: April 1, 2014

Use this worksheet to summarize the report. Be sure to complete and submit the Checklist for Report Completeness. **Attach a chronology of activities associated with the affected property.**

Briefly describe the affected property and PCLE zones, the conclusions from the assessment activities, identify any affected or threatened receptors, and describe any other major considerations taken into account when developing this response action plan. If any portion of the response action is necessitated due to an aesthetic or nuisance condition, identify the nature of that condition and identify that portion of the response action proposed to address it. If any media that contains a PCLE zone is not addressed in this RAP, provide justification.

The Undeveloped Buffer Property (the Site) consists of 13 tracts of undeveloped land totaling approximately 170-acres surrounding the former Exide Technologies Frisco Recycling Center, a former battery recycling and lead smelting facility (Former Operating Plant, FOP) which operated until late November 2012. The FOP is located at 7471 S 5th Street in Frisco, Collin County, Texas. The Site was used for agricultural purposes dating back to the early 1900s. With the exception of a demolished residential structure and two barns in various states of deterioration, no buildings or other improvements are present at the Site. The majority of the Site is vacant land/fields with limited areas of dense vegetation. Various tracts making up the Site were acquired by Exide Technologies (Exide) or its predecessors between 1983 and 2001 (SWG, 2013). Although battery chips have been found in some discrete and localized areas at the Site, battery recycling or lead smelting operations are not known to have occurred at the Site.

The following media had chemicals of concern (COC) concentrations above critical PCLs (CPCLs):

Surface Soils – Soils at the Site are primarily impacted by lead. The majority of the lead impacts are present in the upper few inches of soil and the concentrations decrease with distance away from the FOP, indicating that these impacts are most likely associated atmospheric deposition. The highest concentrations of lead are found in the upper one to two feet of soil on either side of former Eagan Way/South 5th Street and are related to an unknown source. A small area of surface soil impacted by copper is present in the northeast part of the Site. This area received runoff from fire fighting conducted at an off-site former Circuit Fab facility in 1988, which is believed to have carried the copper onto the Site. Lead impacted soils were also identified in an area containing fill material east of Parkwood Drive. As indicated in the Affected Property Assessment Report (APAR) completed for the Site, lead and copper were found to exceed the applicable critical PCLs, therefore, in accordance with Texas Risk Reduction Program (TRRP) requirements, lead and copper are the COCs to be addressed in the response action. Due to the proximity to the Exide former operating plant, lead and cadmium in airborne dust will continue to be monitored during the response action (see Appendix 6).

Some battery chips were found in several locations during the site investigation. In most cases the battery chips were isolated occurrences and the soils in the vicinity of the battery chips were not impacted. At one location, the undocumented fill area east of Parkwood Drive, occasional battery chips were observed among the debris comprising the fill material (typically broken concrete, piping, glass, plastic and wire). Soil samples collected from two of the five test pit excavations in this area indicated lead concentrations exceeding the applicable cleanup level. PCLE zones are based on COC concentrations in environmental media (soils), not the presence of battery chips since the occurrence of battery chips on the Site is sporadic and is not necessarily associated with affected soils. The excavation areas proposed in this Response Action Plan include fill areas outside the boundaries of the PCLE zones where battery chips were observed in test pits during the affected property assessment (Tract G, See Figure 2A.4). Exide will also remove any other battery chips observed during the excavation activities to be conducted under this plan.

The total area of affected soils at the Site is approximately 17 acres and represents a volume of approximately 24,000 cubic yards of soil.

What is the selected remedy standard for this affected property? X A ___ B

RAP Executive Summary	ID No.: 2541
	Report Date: April 1, 2014

List all media that contains a PCLE zone and specify the proposed response action for each media. Indicate the type of removal, decontamination, physical control and/or institutional control action that is proposed.

Media	COCs[1]	Removal	Decontamination	Control			
				Physical Control	Modified Groundwater Response Objective[2]		
					PMZ	WCU	TI
Shallow Soils	**Lead, copper**	**X**					

Is there a media that contains a PCLE zone that is not addressed in this RAP? ____ yes __X__ no

If yes, provide justification for not addressing the PCLE zone in this RAP.

On-site land use: [ ] Residential [X] Commercial/Industrial*

Off-site land use: [ ] Residential [X] Commercial/Industrial (check all that apply)

*** Residential assessment and cleanup standards are being implemented for this Site. A cleanup standard of 250 mg/kg, one-half of the residential standard, is being used for lead.**

Is this a re-submittal or revision of a previous RAP? ____ Yes __X__ No

If yes, explain why the RAP is being revised or resubmitted.

Were all the appropriate notifications made in accordance with §350.55? ____ Yes ____ No

If no, explain why notifications were not made:

Not Applicable

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).

[2] If a modified groundwater response objective is proposed, check the type(s) of proposed modifications.

Checklist for Report Completeness

ID No.: 2541

Report Date: April 1, 2014

				Report Contents
No ☒	Is the response action a remedy standard B?	☐ Yes →	**Worksheet 2.4** Institutional Controls	☐
		Required	**Worksheet 3.0** Performance Measures and Potential Problems	☒
		Required	**Worksheet 3.1** Monitoring and Sampling	☒
		Required	**Attachment 3A*** Map of Monitoring and Sampling Points	☐
		Required	**Worksheet 3.2** Operation and Maintenance	☐
		Required	**Worksheet 4.0** Confirmation Sampling Plan	☒
		Required	**Attachment 4A*** Map of Confirmation Sampling Points	☐
No ☒	Is the response action a Remedy Standard B?	☐ Yes →	**Worksheet 5.0** Post Response Action Care	☐
		→	**Attachment 5A*** Map of PRAC Monitoring and Sampling Points	☐
		→	**Attachment 5B*** PRAC Costs	☐
No ☒	Does the person, who is a small business, desire to modify the financial assurance requirement?	☐ Yes →	**Attachment 5C*** Small Business Affidavit	☐
		Required	**Worksheet 6.0** Implementation Schedule	☒
		Required	**Appendix 1*** References	☒
No ☐	Was any data collected that was not previously reported?	☒ Yes →	**Appendix 2*** Data Tables and Boring Logs	☒
No ☒	Were any studies or tests conducted?	☐ Yes →	**Appendix 3*** Studies and Tests Documentation	☐
No ☒	Is the response action a Remedy Standard B?	☐ Yes →	**Appendix 4*** Proposed Institutional Controls	☐
No ☒	Are any institutional controls proposed/required on property not owned by the person?	☐ Yes →	**Appendix 5*** Landowner Concurrence	☐
No ☐	Are any of the sample collection or handling procedures different from those reporting in the APAR or other previously submitted report?	☒ Yes →	**Appendix 6*** Sampling Procedures	☒
No ☒	Are statistics or geostatistics proposed to be used as part of the response action?	☐ Yes →	**Appendix 7*** Statistical Methodology	☐
No ☒	Was approval received from the TCEQ regarding the use of different rules to address a media?	☐ Yes →	**Appendix 8*** Split Media Approval	☐

Form contents marked with an asterisk (*) are not included in the blank form.

Chronology	No.: 2541 Report Date: April 1, 2014

Chronology

Date of Report or Event(s)	*Title of Report*/ Assessment Activities	Author/Assessor	Summary of Environmental Assessment and/or Correspondence
April 1, 2014	*DRAFT Affected Property Assessment Report, Exide Technologies Undeveloped Buffer Property, Frisco, Collin County, Texas*	Pastor, Behling & Wheeler, LLC	Draft Affected Property Assessment Report prepared for the Undeveloped Buffer Property
January 16, 2014	Groundwater sampling event	Pastor, Behling & Wheeler, LLC	Newly installed monitoring wells and existing wells in the vicinity of previous arsenic and MTBE detections sampled during this event
January 3, 2014	Soil sampling event, monitoring well installation	Pastor, Behling & Wheeler, LLC	Confirmation soil samples collected at eight sample locations to address potential bias in previously collected data. Installation of monitoring well VCP-MW-13
December 12, 2013	Monitoring well installation	Pastor, Behling & Wheeler, LLC	Installation of monitoring well VCP-MW-12
July 1, 2013	Approval of Phase I Environmental Assessment	Gary Beyer, TCEQ	TCEQ approval of Phase I Environmental Site Assessment prepared for the Undeveloped Buffer Property and APAR scope of work, submitted with VCP application
May 21, 2013	Soil sampling event	Pastor, Behling & Wheeler, LLC	Additional surface soil samples collected
May 15, 2013	Soil sampling event	Pastor, Behling & Wheeler, LLC	Collection of additional surface soil sample in the area near an off-site former Circuit Fab facility
May 7, 2013	Soil sampling event	Pastor, Behling & Wheeler, LLC	Collection of additional vertical delineation samples, excavation of test pits, collection of additional surface soil samples for arsenic analysis
April 29, 2013	Site-wide groundwater gauging event	Pastor, Behling & Wheeler, LLC	Site-wide groundwater gauging event
April 26, 2013	Sampling and analysis of newly installed wells (VCP-MW-9, 10, and 11)	Pastor, Behling & Wheeler, LLC	Assessment of groundwater in NE portion of Site
April 24, 2013	Collection of additional surface soil samples	Pastor, Behling & Wheeler, LLC	Horizontal delineation of impacted soil and soil pH for Tier 2 calculations
April 15, 2013	Installation of 5 monitoring wells	Pastor, Behling & Wheeler, LLC	Assessment of groundwater in NE portion of Site and along So. 5th Street (VCP-MW-7 through 11)
March 11, 2013	Re-sample well VCP-MW-4	Pastor, Behling & Wheeler, LLC	Re-sample well VCP-MW-4 to verify SVOC detects
March 13, 2013	*Community Relations Plan*	VCP Applicants	Community Relations Plan prepared and submitted for VCP project

Chronology	No.: 2541 Report Date: April 1, 2014

Date of Report or Event(s)	*Title of Report*/ Assessment Activities	Author/Assessor	Summary of Environmental Assessment and/or Correspondence
March 19, 21, 22, 2013	Groundwater sampling and analysis	Pastor, Behling & Wheeler, LLC	Assessment of groundwater (VCP-MW-2 through 6, MW-19, MW-20, MW-28)
March 18, 2013	Site-wide grid sampling, focused sampling along So. 5th Street	Pastor, Behling & Wheeler, LLC	Completion of site-wide assessment with ½ acre exposure area assumption, additional surface and shallow soil samples collected along So. 5th Street.
March 5, 2013	VCP Agreement	VCP Applicants	Submittal of the VCP Agreement
February 27 through March 1, 2013	Installation of 7 monitoring wells	Pastor, Behling & Wheeler, LLC	Assessment of groundwater (VCP-MW-1 through 6, MW-28)
February 26, 2013	*Phase I Environmental Site Assessment*	Southwest Geoscience	Submittal of Phase I ESA
October 25, 2012	VCP Application	VCP Applicants	Submittal of VCP Application
May 2012	Surface soil sample collection	Pastor, Behling & Wheeler, LLC	Follow-up grid sampling
March 2012	Surface soil sample collection	Pastor, Behling & Wheeler, LLC	Initial grid sampling
January 12, 2012	Monitoring well installation	Pastor, Behling & Wheeler, LLC	Installation of MW-19 and MW-20

1 Response Action Objectives

Use this worksheet to describe the objectives for the response action in each media.

Response Action Objectives

List the environmental media to which this applies **Surface soil (0-15 ft below ground surface)**
Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

Surface soils in certain areas of the Site are impacted with lead from the adjacent former battery recycling facility as reported in the APAR being submitted concurrently with this document (PBW, 2013a). The majority of the area requiring a response action contains impacted soil in the upper few inches of the soil column. Other areas requiring response actions include soil impacted with lead from an unknown source along the former South 5th Street (up to two feet below ground surface), lead-containing fill/debris material (up to five feet below ground surface) in an area northeast of Parkwood Drive, and copper in the upper few inches of soil in an area in the northeast part of the Site that received run-off from firefighting activities at an off-site circuit board manufacturing facility. The areas of the Site proposed to be remediated as part of this response action are presented on the Figures 1A.2 through 1A5 (PCL exceedance zones).

A Residential Remedy Standard A response action objective is proposed for the shallow soils at the Site in accordance with TAC §350.31 and 350.32, and the associated guidance documents *Application of Remedy Standards A & B* (TCEQ, 2008) and *Soil and Groundwater Response Objectives* (TCEQ, 2013), with a modified lead cleanup level of 250 mg/kg, which is one-half of the applicable residential standard. Excavation of these surface soils will be conducted in accordance with the Remedy Standard A response objectives outlined in 30 TAC §350.32(a)(3) and (4). The response action objectives are designed to protect ecological and human receptors from direct exposure to surface soils and meet the cleanup requirements for residential land use. In addition to the activities described in this Response Action Plan, the property will be zoned and deed restricted for commercial/industrial use.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

Affected soils will be excavated, stockpiled pending waste characterization, and transported to the Class 2 landfill located on the adjacent Exide Technologies property (Class 2 waste) or an off-site landfill authorized to accept the material (hazardous or Class 1 waste~~, or treated/stabilized waste~~).

Key components of the removal action include the following:

- **Areas requiring excavation will be located and marked using a differential GPS prior to excavation.**
- **Excavation areas will be cleared of trees and brush prior to excavation beginning. Root/subsurface obstructions will be removed during excavation activities.**
- **A remediation contractor will perform removal, characterization and management/disposal of affected surface soils from the Site that were identified as containing levels of copper or lead at concentrations exceeding the applicable PCLs. A total of approximately 18,000 cubic yards of soil/debris are expected to be removed from the Site.**
- **Battery chips identified in the affected property assessment, and encountered during the response**

action, will be removed.

- **Site workers will utilize appropriate personal protective equipment to mitigate potential exposure to COCs.**
- **Air monitoring will be conducted at the perimeters of the Site during dust-generating activities to determine if concentrations of lead, cadmium and particulate emissions exceed the "Take Action" or "Stop Work" levels established for the response action (see Appendix 6). Dust control procedures will be implemented during the remediation activities to address fugitive dust emissions (see Appendix 6).**
- **Excavated material will be stockpiled on plastic sheeting and sampled for waste characterization (see Sampling and Analysis Plan in Appendix 6). Stockpiled soils will be covered to minimize exposure pending characterization and disposal.**
- **Excavated soils meeting the criteria for placement in a non-hazardous Class 2 landfill will be transported and managed/disposed of at the Class 2 landfill located on the adjacent Exide property or at an appropriate off-site facility.**
- **Excavated soils that do not meet the Class 2 landfill criteria will be transported and disposed of in an off-site landfill authorized to receive the soils (Class 1 non-hazardous or hazardous) based on characterization data.**
- **In areas impacted by lead, residual soils in excavated areas will be screened for lead concentrations using an X-ray fluorescence analyzer (XRF). If XRF readings indicate that impacted soils have been removed, confirmation samples will be collected for laboratory analysis to verify that impacted soils have been removed to the response action objective of 250 mg/kg lead. If XRF screening indicates that elevated concentrations of COCs are still present, additional excavation will be performed until the screening indicates that impacted soils have been removed, followed by confirmation sampling. During this process the XRF data will be compared to initial assessment results or confirmation samples to evaluate the accuracy of the XRF and develop a correlation between the screening values and analytical results.**
- **Confirmation samples will be collected for laboratory analysis following excavation of soils to ensure that all affected soils containing lead or copper at concentrations in excess of the response action objectives have been removed (see Appendix 6).**
- **Upon completion of confirmation sampling, the excavation area will be restored by backfilling and/or grading.**

None of the proposed response action activities are expected to result in any additional exposure conditions.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

It is estimated that the removal actions will be implemented as soon as possible following RAP approval and that time is not a critical factor in limiting potential exposure. The response action is estimated to require approximately 60 days to complete.

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate how that physical control or combination of measures will reliably contain COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

Not applicable, no physical controls are proposed.

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevent COC concentrations above the critical soil PCLs from migrating beyond the existing boundary of the soil PCLE zone.

The removal action will remove soils with lead exceeding the response action objective, which is below the residential standard, agreed to by Exide, the City of Frisco, and the other VCP applicants (250 mg/kg), or copper exceeding the critical PCL (548 mg/kg). Removal will be confirmed through collection of confirmation samples. In the event the confirmation samples indicate COCs with concentrations greater than the 250 mg/kg for lead and 548 mg/kg for copper are still present, additional excavation followed by confirmation sampling will be performed to remove the affected soil until confirmation samples indicate the response action objectives have been achieved.

Groundwater Response Action Objectives – NOT APPLICABLE

Name of groundwater-bearing unit to which this information applies _____

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification ____ 1 ___ 2 ____ 3

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? ___ Yes ___ No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? ___Yes ___No

If yes, complete the appropriate portions of this report.

If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh\text{-}V}$) is exceeded.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

ATTACHMENT 1A

Figure 1A.1 – On-Site Property Map
Figure 1A.2 Affected Property and PCLE Zone Map: M Tract Area
Figure 1A.3 Affected Property and PCLE Zone Map: SW Area
Figure 1A.4 Affected Property and PCLE Zone Map: SE Area
Figure 1A.5 Affected Property and PCLE Zone Map: NE Area

EXPLANATION

- Former Operating Plant Boundary (Approximate)
- Undeveloped Buffer Property Subject to The Voluntary Cleanup Program
- Approximate Farmhouse Debris Area

N

Scale in Feet

0 250 500

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

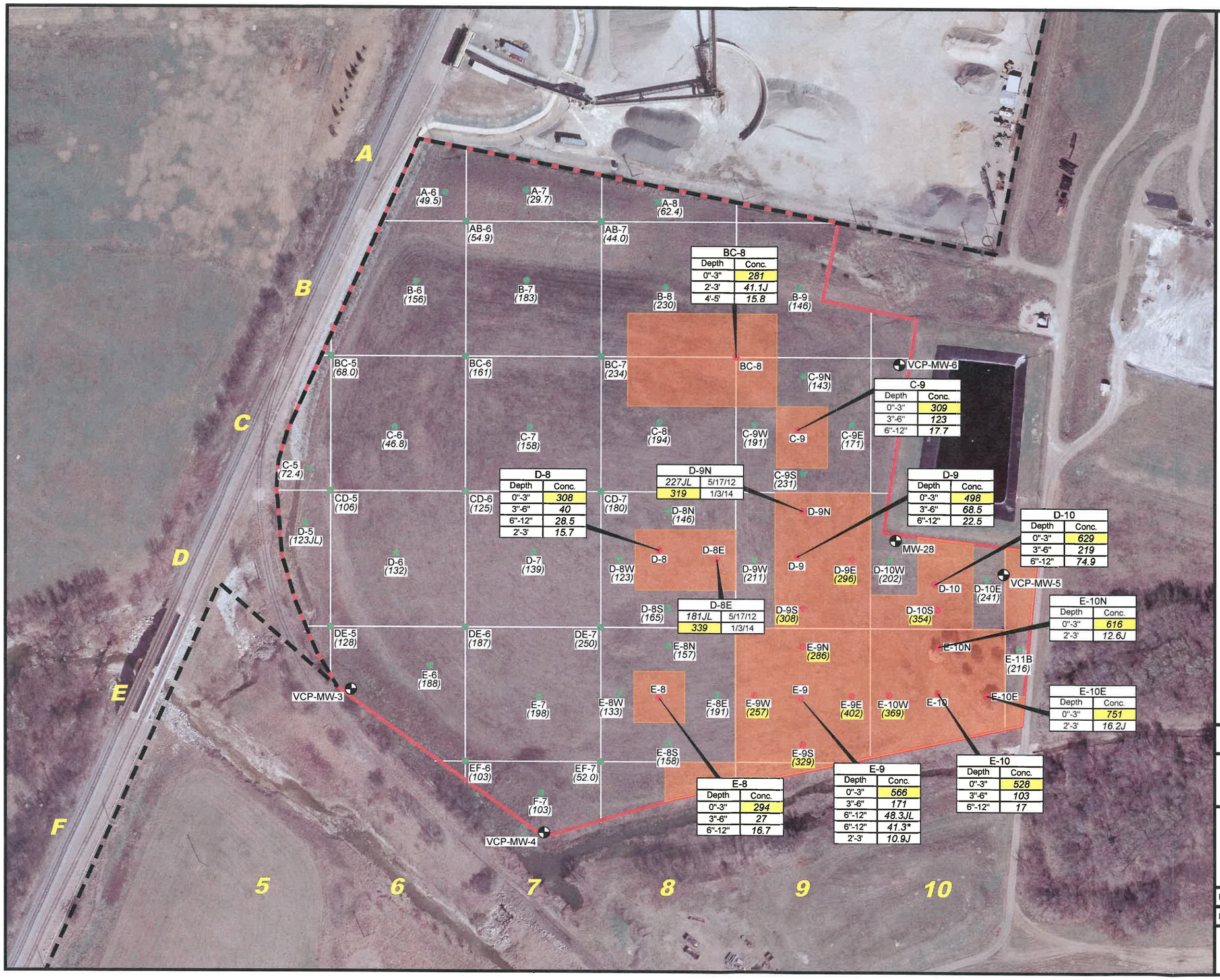
UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.1

ON-SITE PROPERTY MAP

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. JH = Estimated value with potential high bias.
2. JL = Estimated value with potential low bias.
3. Highlighted values exceed the applicable assessment level.
4. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.
5. * Denotes confirmation sample collected 1/3/14.

N

Scale in Feet
0 75 150

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

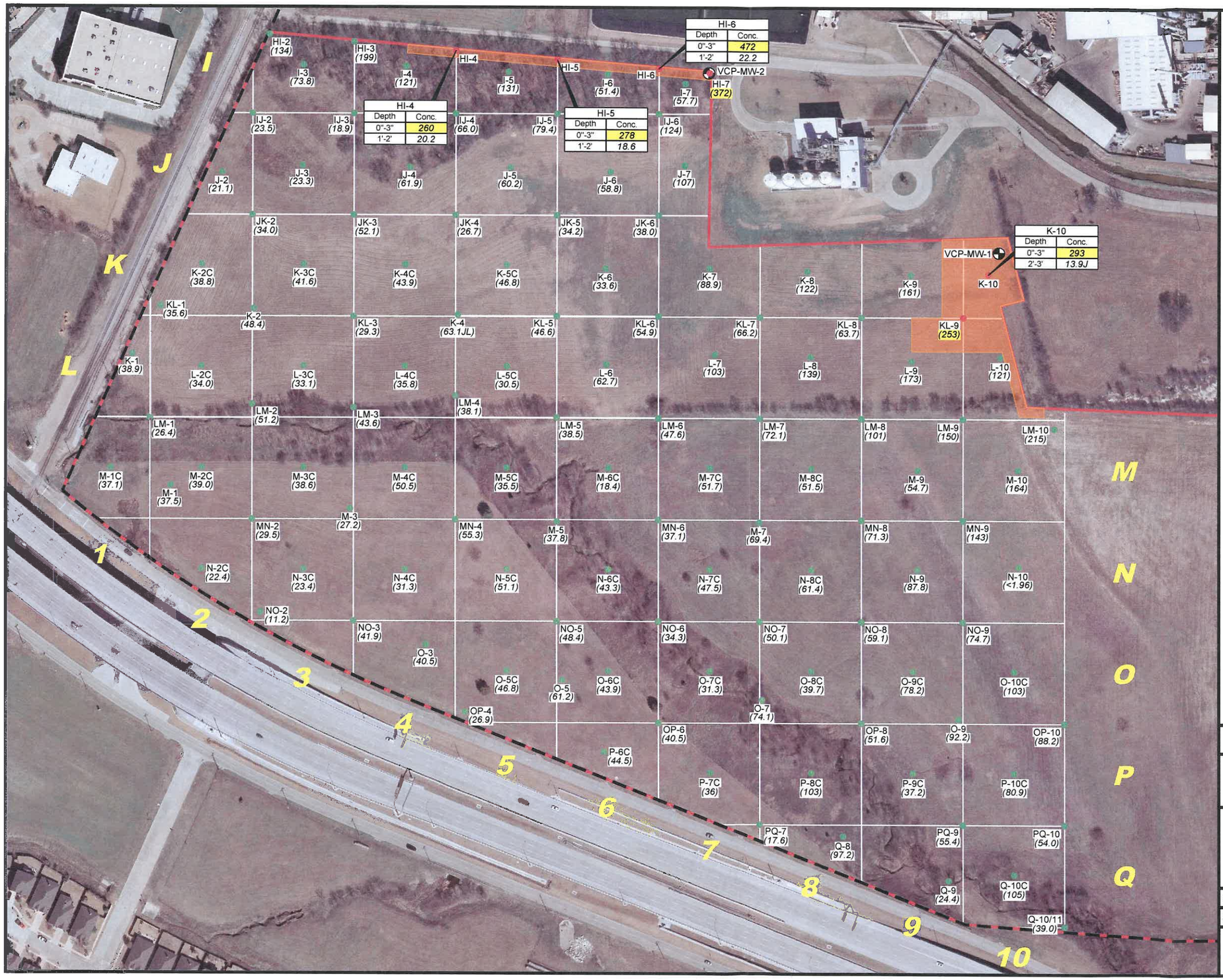
UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.2

AFFECTED PROPERTY & PCLE ZONE MAP M TRACT AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. Highlighted values exceed the applicable assessment level.
2. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.

N

Scale in Feet
0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

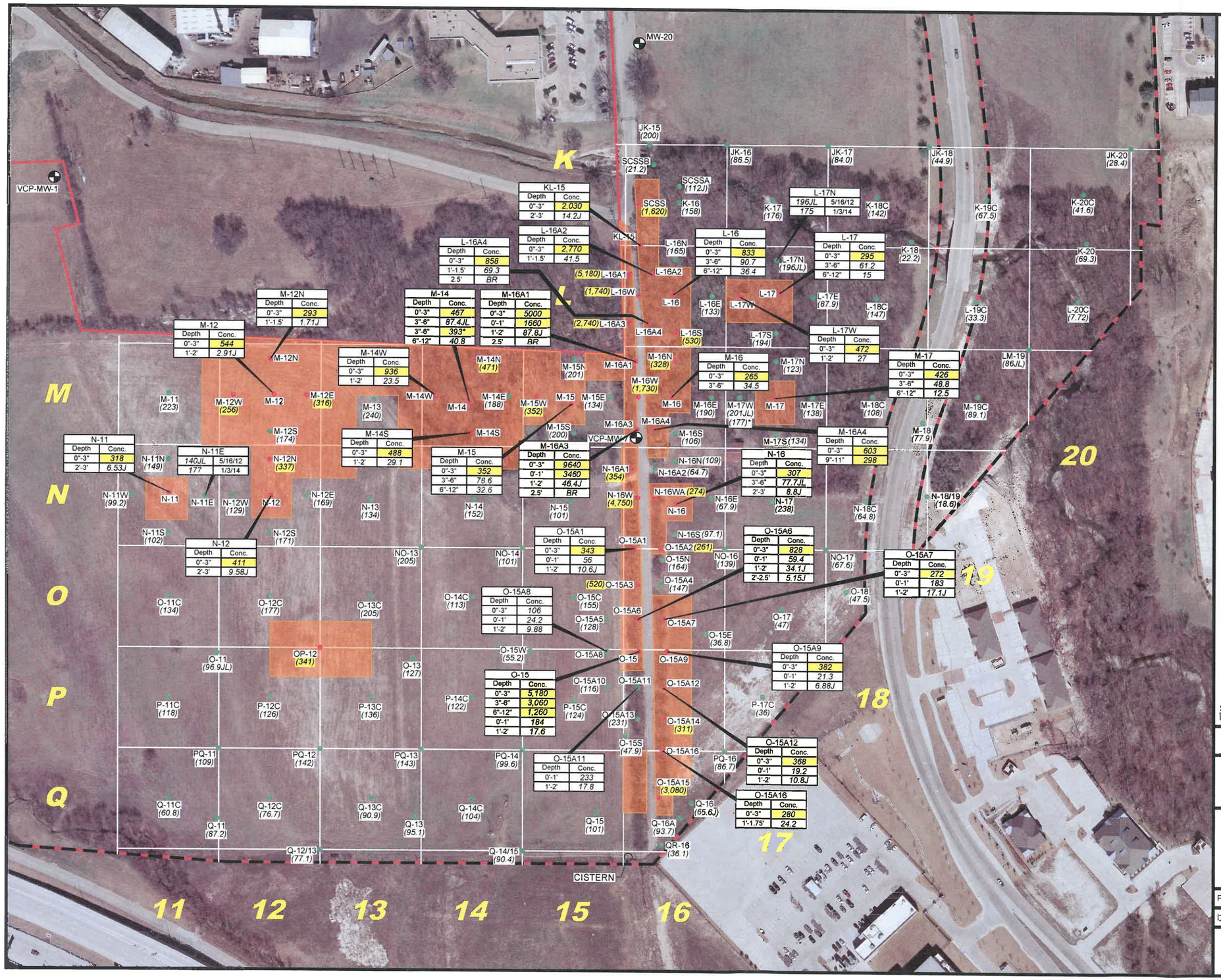
UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.3

AFFECTED PROPERTY & PCLE ZONE MAP SW AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. JH = Estimated value with potential high bias.
2. JL = Estimated value with potential low bias.
3. Highlighted values exceed the applicable assessment level.
4. BR = Bed Rock/Limestone encountered at this depth.
5. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.
6. * Denotes confirmation sample collected 1/3/14.

N

Scale in Feet
0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

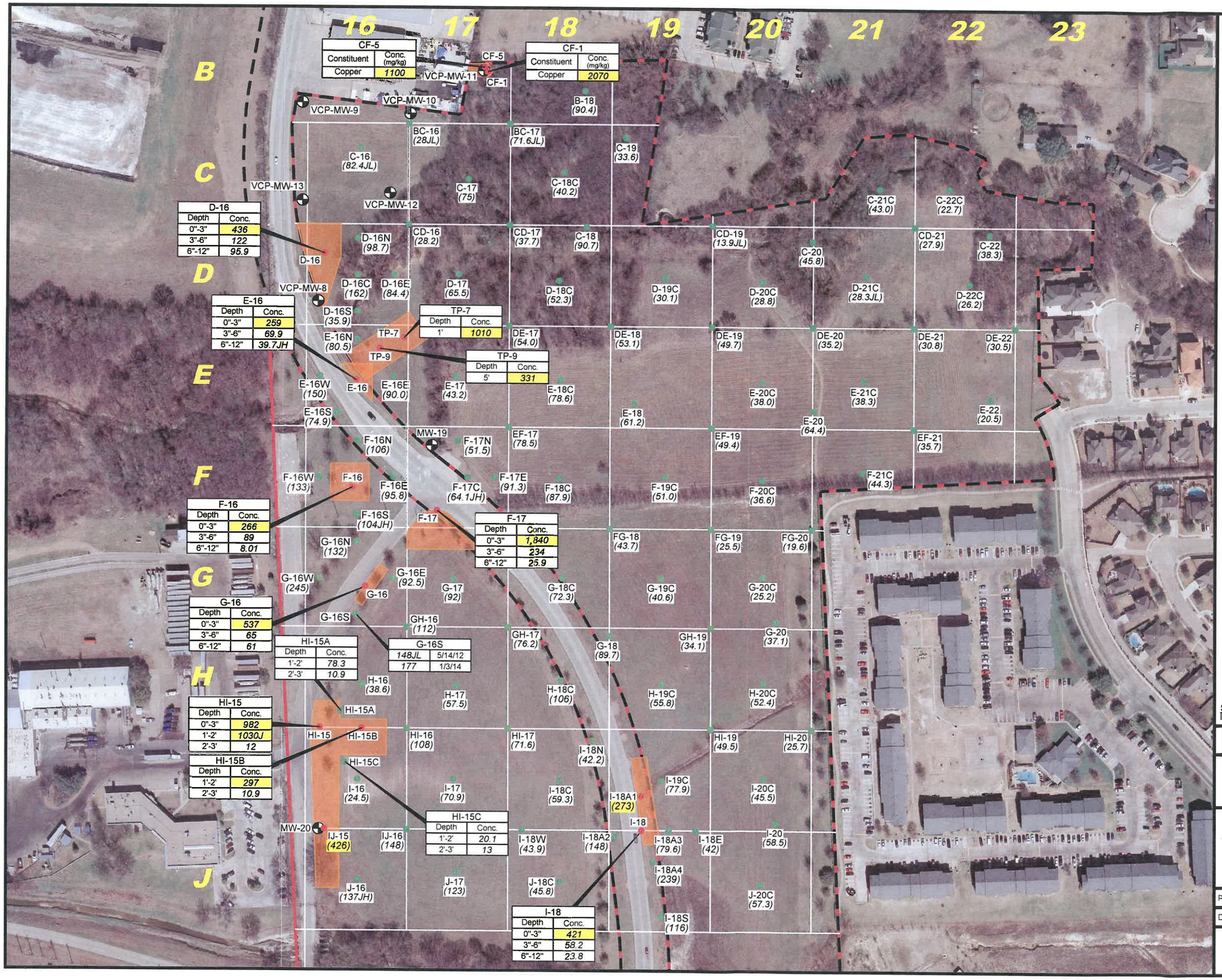
UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.4

AFFECTED PROPERTY & PCLE ZONE MAP SE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. JH = Estimated value with potential high bias.
2. JL = Estimated value with potential low bias.
3. Highlighted values exceed the applicable assessment level.
4. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.
5. Test Pit and Circuit Fab Area sample locations only shown where COCs exceed the applicable assessment levels.

N

Scale in Feet
0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.5

AFFECTED PROPERTY & PCLE ZONE MAP NE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

2 Response Action Design

Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: **Surface Soil (0-15 feet below ground surface)**
List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

The removal action for surface soils at the Site will be conducted under Remedy Standard A. The removal action has been designed to remove surface soils containing COCs at concentrations exceeding the response action objective (for lead), or the critical PCL (for copper). COC concentration data are shown on Figures 1A.2 through 1A.4 and are also provided in tabulated form in Appendix 2. The proposed excavation plan is presented on the figures provided in Attachment 2A. Soils will be excavated to the vertical extent of the PCLE zones, which are estimated to be:

0-6 inches in areas impacted by aerial deposition of lead (aerial deposition areas)
0-2 feet in the area along South 5th Street (former Eagan Way/South 5th Street)
0-5 feet in the fill area in Tract G (fill material in Tract G)
0-1 feet in the area impacted by copper (copper impacted soil)

Prior to implementation of the response action, the boundaries of the affected areas will be marked with stakes and/or flagging to serve as excavation control points. Prior to beginning land-clearing activities, a Tree Permit for removal of trees during the response action will be obtained from the City of Frisco. In impacted areas containing trees, an arborist will be consulted to ensure compliance with the City of Frisco Tree Preservation Requirements. Prior to excavation, trees and bushes that require removal in affected areas will be removed by cutting close to ground level. Removed trees will be disposed at an off-site facility authorized to accept the material, or will be ground or chipped with the mulch left in place at the Site. Any remaining root structures will be removed during the excavation activities. Root structures will be disposed of with the soil from the area where they were removed.

Excavation Procedures:
Aerial deposition areas: Impacts in these areas are typically limited to the upper three inches of soil. An excavation depth of six inches will be used in these areas (to ensure all impacted soils are removed and to account for the limits of precision using heavy equipment). The estimated volume of material to be removed from these areas is 12,000 cubic yards. An additional 1,000 cubic yards of root balls and other debris is expected to be generated during excavation of these areas.

Former Eagan Way/South 5th Street: The soils in this area are located on top of a limestone outcrop which limits the vertical extent of impacts. The depth of the limestone is typically one to three feet below ground surface; therefore, excavation in this area will be conducted using backhoe and bull dozer equipment to excavate down to the limestone. Where conditions permit (i.e., bedrock can be broken up), confirmation samples will be collected in areas excavated to bedrock. The estimated volume of material to be removed from this area is 2,500 cubic yards.

Fill Material in Tract G: Lead impacts have been detected in fill/debris material (clayey soils mixed with broken concrete, asphalt, bricks, metal and glass) up to five feet below ground surface. Impacted material

in this area will be removed using an ~~small~~ excavator. The estimated volume of material to be removed from this area is 10,000 cubic yards.

Copper Impacted Soil: Copper impacts in this area are limited to the upper one-foot of soil in a 30 x 30 foot square area. This area will be excavated using a small excavator. The estimated volume of material to be removed from this area is 44 cubic yards.

In addition to impacted soils, debris and trash accumulations around the old farmhouse area will also be removed. There are no known threats to human health and the environment from this trash and this activity is not part of the response action. Material removed as part of these activities will be disposed of off-site at a facility authorized to receive the material.

Air quality will be monitored during the excavation activities as described in the Perimeter Air Monitoring and Dust Control Plan provided in Appendix 6. Air monitoring includes real-time measurements of wind speed, wind direction and particulate matter at the perimeters of the Site. Take action and stop work criteria have been established to ensure dust generating activities do not present an undue risk to off-site receptors. Site monitoring data and quality assurance data generated during the response action will continue to be provided to the public and TCEQ in a summary report that will be posted on the Exide Frisco closure website (www.exidefriscoclosure.com).

Soil Handling Procedures:
Excavated soils will be staged on plastic sheeting and stockpile volumes will be approximately 250 cubic yards or less. The stockpiles will be placed outside of the excavation areas on plastic sheeting. Stockpiles will be covered with plastic sheeting when not in use to prevent dust generation and infiltration from rain. Stockpiles will be surrounded by a berm to prevent water runoff/runon.

Soils excavated from areas along former South 5th Street where the lead concentration is greater than 3,000 mg/kg (based on previous sampling) will be placed in roll off boxes to segregate the material for waste profiling. Each roll off box will hold approximately 10 to 12 cubic yards of soil and will be covered with tarps when not in use. Preliminary Toxicity Characteristic Leaching Procedure (TCLP) test results performed on in-situ soil samples are presented on Table A2-12 in Appendix 2. These data suggest that soil containing lead concentrations greater than 5,000 mg/kg may be characteristically hazardous based on their leaching potential. A value of 3,000 mg/kg is used as a conservative criterion for segregating excavated soils that are more likely to be characterized as hazardous. The contents of the roll off boxes will be appropriately labeled and will be removed from the Site within 90 days.

Waste characterization samples will be collected from stockpiled soils and roll offs and analyzed as described below. A five-part composite sample will be collected for each approximately 250 cubic yard stockpile by collecting an aliquot from five separate areas of the pile and combining them to create a representative sample (simple random sampling). Similarly, a five-part composite sample will be created by collecting five discrete samples from within each roll off box and combing them to create the composite sample. The action of excavation and placement of the soils into stockpiles or roll off boxes will sufficiently mix the material that samples collected from the surface of the material are representative of the entire pile. Following sample collection, sample jars will be placed in ice chests and handled under chain-of-custody procedures. Samples will be delivered to an accredited analytical laboratory by sampling personnel, courier, or overnight delivery service. The composite samples will be analyzed for concentrations of the RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) in TCLP extract using EPA Method 1311 (TCLP) and 6010B/6020A (metals concentrations). Additional analyses may be performed to meet any additional requirements of specific off-site disposal facilities.

Waste classification will be determined using the following TCLP criteria:

	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Hazardous (mg/l)	≥5	≥100	≥1	≥5	≥5	≥0.2	≥1.0	≥5
Non-haz Class 1 (mg/l)	NA	NA	0.5 - <1	NA	1.5 - <5	NA	NA	NA
Non-haz Class 2 (mg/l)	<1.8	<100	<0.5	<5	<1.5	<0.2	<1	<5

Following characterization testing, stockpiled soils that meet the criteria for non-hazardous Class 2 waste will be transported to, and disposed of, at the Class 2 landfill on the adjacent Exide property or at an appropriate off-site facility. Soils determined to be hazardous or Class 1 non-hazardous wastes will be transported and disposed of at off-site landfills permitted to accept the material.

Confirmation Sampling Procedures:

Upon completion of the excavation activities in a particular lead-impacted area, a handheld X-ray fluorescence (XRF) meter will be used to screen the base and sidewalls of the excavated area for the presence of lead concentrations exceeding the assessment level. If the XRF screening indicates concentrations of lead greater than 250 mg/kg are present, additional excavation will be conducted in those areas and the area screened again following excavation. During the response action, XRF data will be compared to project data to correlate the accuracy of the XRF. Once excavation has been completed, i.e., all soil exceeding 250 mg/kg lead has been removed, confirmation samples will be collected from the excavation area. Confirmation samples will be collected from the base of the excavation at a frequency of one sample for each 50-foot by 50-foot or 2,500 square foot area and the locations recorded using a GPS. Confirmation samples will be collected from the ground surface (0 to 3 inches) of the perimeter of the excavation area (sidewall samples) at a frequency of one sample per 100 linear feet of perimeter, or one on each side of the excavation if smaller than 100 x 100 ft. Confirmation samples from lead-impacted areas will be analyzed by EPA method 6010B/6020A for total lead and cadmium to ensure that all soils with ~~lead~~ concentrations greater than the target remediation levels have been removed. Confirmation samples from copper-impacted areas will be analyzed by EPA method 6010B/6020A for total copper to ensure that all soils with copper concentrations greater than the assessment level of 548 mg/kg have been removed. The results of the confirmation sampling activities will be summarized in a Response Action Completion Report (RACR) prepared upon completion of the response action.

Restoration Procedures:

Areas of the Site where the excavation depths did not exceed one foot will be re-graded to avoid ponding and ensure adequate drainage. In areas where the excavation depths exceed one foot below surrounding ground surface, the excavation will be backfilled with clean soil excavated during the on-site landfill construction activities that has been stockpiled on a plastic liner at the FOP (see Appendix 2 for sampling information and analytical results). Areas along the former South 5th Street will be restored in a manner to minimize the potential for erosion along the roadway. Restored areas will be re-seeded in accordance with a Stormwater Pollution Prevention Plan (SWPPP) prepared for the Site. Mitigation requirements for trees removed during the response action will be performed in accordance with City of Frisco requirements.

Institutional Controls:

Institutional controls are not required for this response action since the response action meets or exceeds the Texas Risk Reduction Program (TRRP) residential cleanup standard (250 mg/kg for lead and 548 mg/kg for copper). As part of an agreement between Exide Technologies, the City of Frisco, and the other VCP applicants, however, all areas of the Site will be subject to institutional controls consisting of deed recordations and/or restrictive covenants placed on the property that limit future land use to commercial and/or industrial activities and restricting the use of groundwater.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

Excavation will be completed using traditional excavation equipment, primarily bull dozers and excavators. Excavated material to be treated will be contained, treated, and transported off-site in roll off boxes. Figures showing the impacted soils to be addressed as part of the response action are provided in Attachment 2A.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

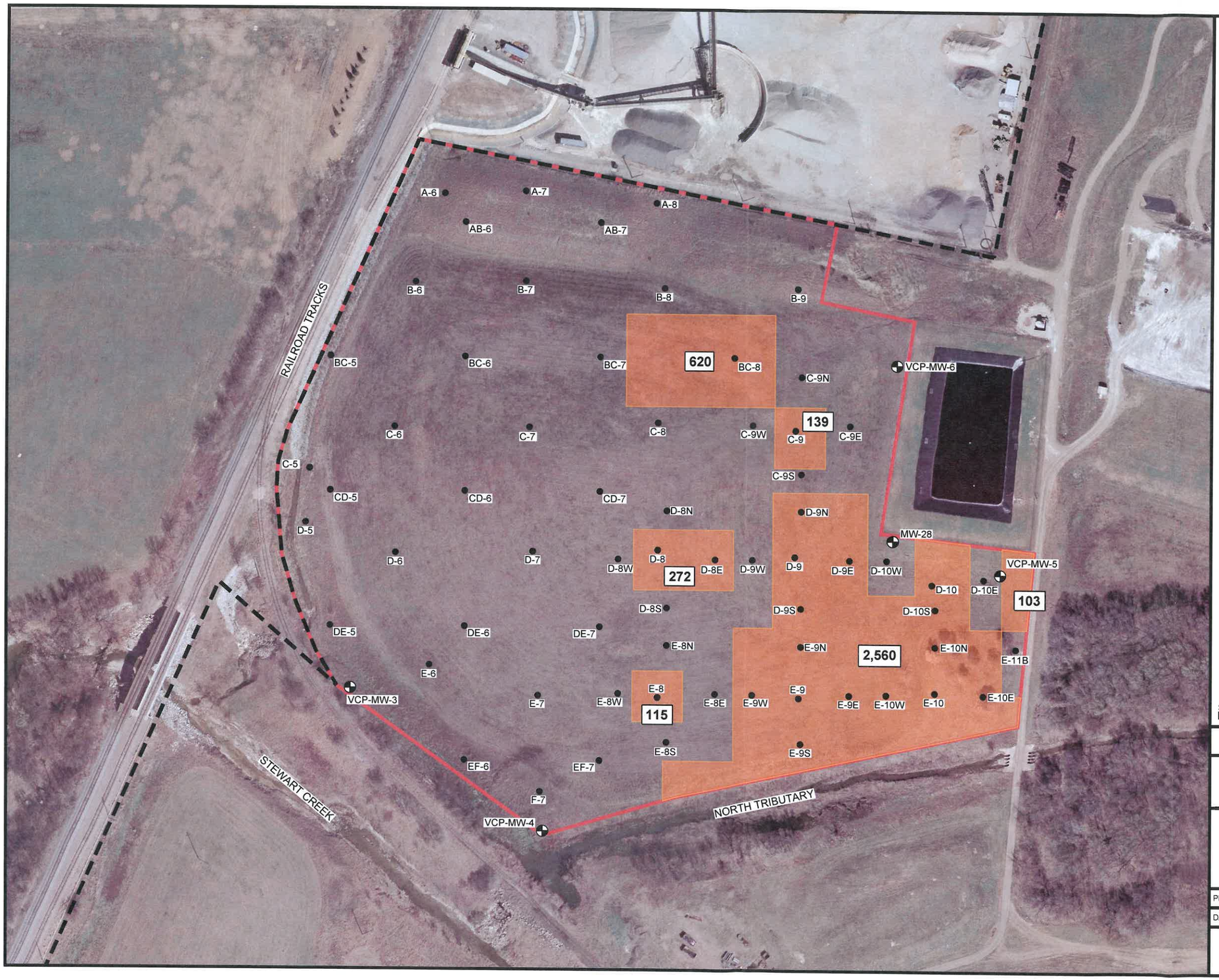
Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
City of Frisco	**Tree Permit**		**Within 30 days of RAP approval**
TCEQ	**Construction SWPPP**		**Within 30 days of RAP approval**
TCEQ	**One-Time Shipment (OTC) temporary Texas registration number, temporary EPA ID number and temporary Texas waste code for a one-time shipment of waste to be disposed of on property other than the Exide Former Operating Plant**		**Within 30 days of RAP approval**

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

None

ATTACHMENT 2A

Figure 2A.1 Soil Excavation Map: M Tract Area
Figure 2A.2 Soil Excavation Map: SW Area
Figure 2A.3 Soil Excavation Map: SE Area
Figure 2A.4 Soil Excavation Map: NE Area



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- 341 — Approximate Excavation Area Volume (Cubic Yards, bank)

M Tract Area total estimated excavation volume 3,809 cubic yards (bank).

N

Scale in Feet

0 75 150

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.1

SOIL EXCAVATION MAP M TRACT AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- 181 — Approximate Excavation Area Volume (Cubic Yards, bank)

SW Area total estimated excavation volume 974 cubic yards (bank).

N

Scale in Feet

0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.2

SOIL EXCAVATION MAP SW AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- PCLE Zone and Proposed Excavation Area (0-1')
- Excavated Soils to be placed in containers pending characterization
- 259 — Approximate Excavation Area Volume (Cubic Yards, bank)

SE Area total estimated excavation volume 6,848 cubic yards (bank).

N

Scale in Feet

0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

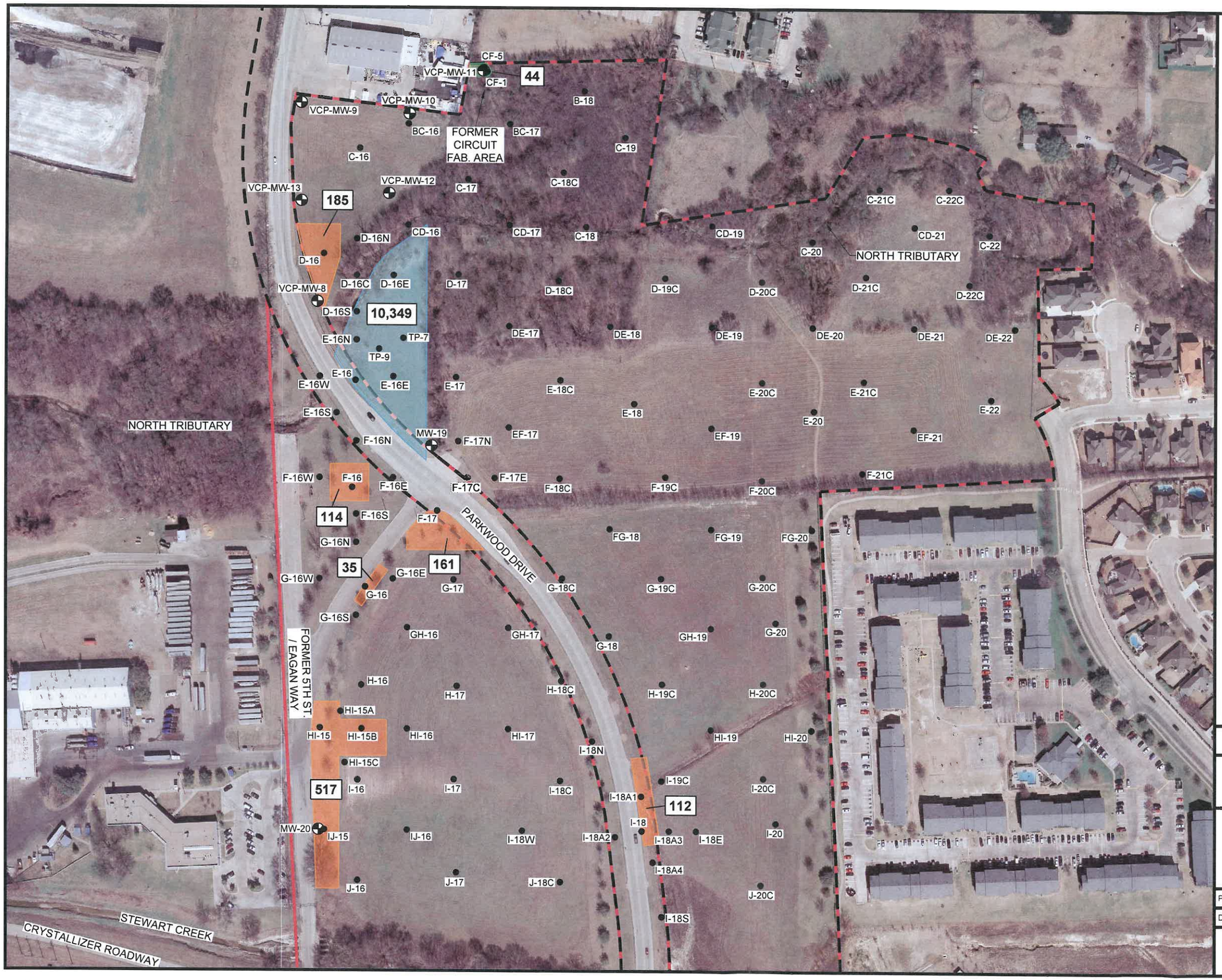
UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.3

SOIL EXCAVATION MAP SE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- PCLE Zone and Proposed Excavation Area (0-1')
- PCLE Zone and Proposed Excavation Area (0-5')
- 136 — Approximate Excavation Area Volume (Cubic Yards, bank)

NE Area total estimated excavation volume 13,025 cubic yards (bank).

N

Scale in Feet

0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.4

SOIL EXCAVATION MAP NE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

3 Performance Measures and Potential Problems

Performance Measures and Potential Problems	RAP Worksheet 3.0 Page 1 of 1	
	ID No.: 2541	Report Date: April 1, 2014

Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that will be used to determine if reasonable progress is being made by the response action in a timely manner. Use these measures to document effectiveness of the response action in the RAER.

The effectiveness of the response action for affected surface soils will be demonstrated by confirmation sampling that indicates COC concentrations in remaining soils are below the response action objectives and/or the critical PCL (250 mg/kg for lead, 52.4 mg/kg for cadmium, and 548 mg/kg for copper). Confirmation samples collected from lead-impacted PCLE zones will be analyzed for lead and cadmium. Confirmation samples collected from copper-impacted PCLE zones will be analyzed for copper.

Potential Problems

Complete the table for the response action. When the response action consists of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: **Soil excavation, stockpiling, disposal, and regrading/backfill**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
COC concentration exceeds response action objective post-excavation	**Potential exposure condition**	**X**		**Continue excavation until COC concentrations in remaining soil are below the response action objectives.**
Dust generation during excavation activities	**Potential exposure condition**		**X**	**Implement additional dust suppression measures, stop work if necessary.**
Exceedance of air monitoring criteria during remediation activities	**Potential exposure condition**		**X**	**Implement additional dust suppression measures, stop work if necessary.**

Monitoring and Sampling	RAP Wo. .heet 3.1 Page 1 of 2	
Associated Information: Attachment 3A	ID No.: 2541	Report Date: April 1, 2014

List the monitoring and sampling of COC concentrations or other parameters that will be conducted during the response action. Illustrate the monitoring or sampling locations in Attachment 3A. If statistics or geostatistics will be used, provide details in Appendix 7. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Soil	**Lead**		**Hand-held XRF analyzer**	**Throughout excavation area**	**Soil surface at base of excavation**	**XRF screening**	**After initial excavation**
	Post excavation confirmation sampling described in RAP Worksheet 4.0						
Subsurface Soil	**None**						
Groundwater	**None**						
Surface water	**None**						
Sediment	**None**						
Air	**Lead, Cadmium**		**Lo-vol cartridge filter samplers**	**Property perimeter**	**NA**	**NIOSH 7300**	**lead and cadmium 3 x per week during work**
	Particulates (PM10)	**wind direction, wind speed**	**E-bam particulate monitors, Site weather station**	**Property perimeter**	**NA**		**Dust/PM10/ wind – continuous monitoring, reported in 30-minute and 60-minute block averages, daily summary report**
Other Media (specify)							

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Monitoring and Sampling	RAP Wo..sheet 3.1 Page 2 of 2	
Associated Information: Attachment 3A	ID No.: 2541	Report Date: April 1, 2014

Explain the reasons for the above-listed monitoring and sampling plan.

During the response action activities, air monitoring will be performed to determine if concentrations of lead, cadmium and particulate emissions are in excess of the "Take Action" or "Stop Work" levels established for the response action (see Appendix 6). A detailed description of the air monitoring program and related dust control program are provided in the Perimeter Air Monitoring and Dust Control Plan included in Appendix 6. Sample locations will be variable depending on wind direction, no Attachment 3A is included.

4 Confirmation Sampling Plan

Confirmation Sampling Plan	RAP Worksheet 4.0 Page 1 of 2	
Associated Information: Attachment 4A	ID No.: 2541	Report Date: April 1, 2014

List the COCs and other parameters that will be sampled to confirm completion of the response action. Illustrate the monitoring or sampling locations in Attachment 4A. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided. If needed, describe the sample collection and handling methods, if not previously provided, in Appendix 6.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Soil	**Lead and cadmium**		**Bulk sampling**	**Excavation areas (lead impacted areas only)**	**Base of excavation**	**US EPA method 6010B/6020A**	**One sample per 50' x 50' area of excavation (or approximate 2,500 square foot area)**
	Lead and cadmium		**Bulk sampling**	**Excavation areas (lead impacted areas only)**	**Perimeter of excavation/ sidewall**	**US EPA method 6010B/6020A**	**One sample per 100 linear feet of perimeter length**
	Lead		**XRF Screening**	**Perimeter and base of excavation areas (lead impacted areas only)**	**Excavation surface**	**NA**	**Determined by excavation progress and data obtained**
	Lead		**Composite sampling (see Appendix 6)**	**Stockpiled soil and soil in roll off boxes (lead impacted areas only)**	**One sample per 250 cubic yard stockpile or roll off box**	**US EPA TCLP preparation and analysis of extract by method 6010B/6020A**	**One time sampling for waste characterization**
	Copper		**Bulk sampling**	**Circuit Fab excavation area**	**Base of excavation**	**US EPA method 6010B/6020A**	**One sample per 50' x 50' area of excavation (or approximate 2,500 square foot area)**
	Copper		**Bulk sampling**	**Circuit Fab excavation area**	**Perimeter of excavation / sidewall**	**US EPA method 6010B/6020A**	**One sample per 100 linear feet of perimeter length**
Subsurface Soil	**None**						

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 6 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Groundwater	**None**						
Surface water	**None**						
Sediment	**None**						
Air	**None**						
Other Media (specify)							

Explain the reasons for the above-listed sampling plan. Discuss statistical or geostatistical methodology(ies) which will be applied, if any, in the data collection process. Discuss any assumptions made in the statistical/geostatistical assessment, and how they will be met.

Excavated areas will initially be screened using a portable XRF meter to identify areas potentially requiring additional excavation (lead-affected PCLE zones). Following excavation, confirmation samples will be collected and analyzed for lead and cadmium, or copper in the copper-affected PCLE zone, to ensure the response action objectives have been met. Confirmation samples will be collected within each 2,500 square foot area from the base of each excavation and every 100 feet along the perimeter/sidewall of each excavation. As these sample locations will be variable depending on the size of the excavation, Attachment 4A is not included.

6 Implementation Schedule

Implementation Schedule	RAP Worksheet 6.0 Page 1 of 1	
	ID No.: 2541	Report Date: April 1, 2014

Document the proposed schedule for implementing the response action. Include all major response action activities through the life of the project, including all removal, decontamination, and control actions, component installations, O&M, monitoring, and post-response action care activities.

Implementation of Response Action (specify component or action)	Start	Finish	Duration
Surface soil Response Action (excavation)	**Within 30days of RAP approval**	**Approximately 60 days after initiating response**	**Approximately 60 days**

List the proposed schedule for report submittals. Add additional lines if more reports than listed will be needed to complete the response action.

Reports	Submittal date
Response Action Effectiveness Report (RAER)	**Not Applicable**
RAER submittal number 1	**Not Applicable**
RAER submittal number 2	**Not Applicable**
RAER submittal number 3	**Not Applicable**
Subsequent RAER submittals	**Not Applicable**
Response Action Completion Report (RACR) (soils only)	**Within 90 days of completion of the response action**
Post-Response Action Care Report (PRACR)	**Not Applicable**
PRACR submittal number 1	**Not Applicable**
PRACR submittal number 2	**Not Applicable**
PRACR submittal number 3	**Not Applicable**

APPENDIX 1

APPENDIX 1

References

APPENDIX 1

REFERENCES

Pastor, Behling & Wheeler, LLC. (PBW), 2013a. Affected Property Assessment Report, Undeveloped Buffer Property, Exide Frisco Recycling Center, Frisco, Texas. July 2013.

Southwest Geoscience, 2013. Phase 1 Environmental Site Assessment, J Parcel Near the Intersection of Eagan Drive and 5th Street, Frisco, Collin County, Texas, February 26, 2013.

Texas Commission on Environmental Quality (TCEQ), 2008. *Application of Remedy Standards A & B*, TRRP Guidance Document TRRP-28.

Texas Commission on Environmental Quality (TCEQ), 20013. *Soil and Groundwater Response Objectives*, TRRP Guidance Document TRRP-29.

APPENDIX 2

APPENDIX 2

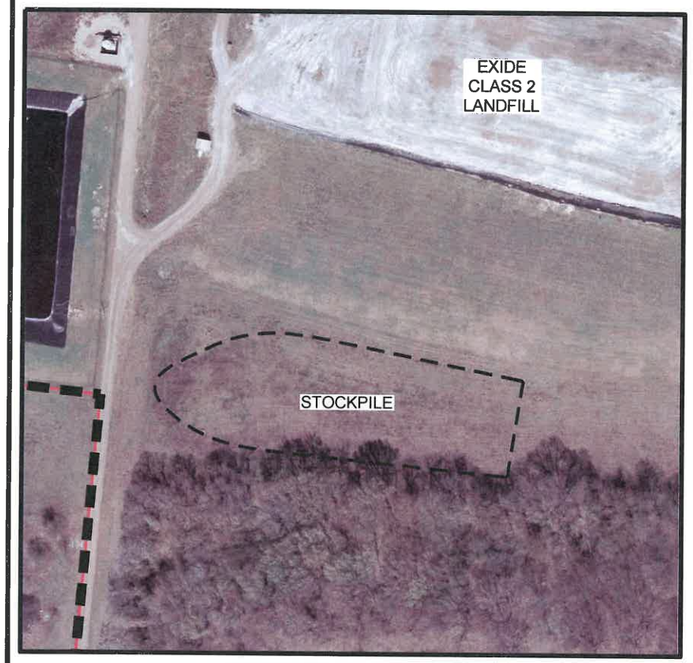
Data Tables

TABLE A2-1
SOIL SAMPLING RESULTS: TCLP ANALYSES
Response Action Plan

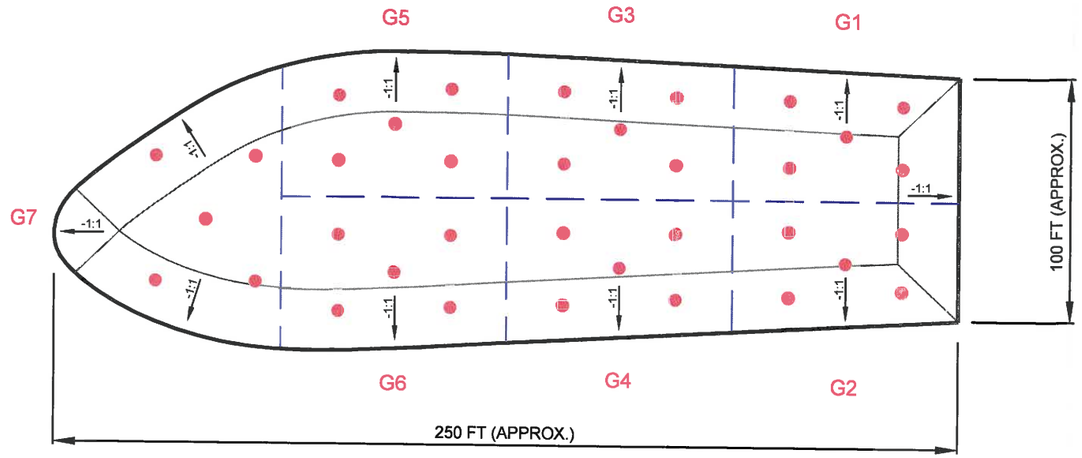
Exide Undeveloped Buffer Property VCP Investigation
Frisco, Texas

Sample ID	Sample Date	Sample Depth (ft)	Lead (mg/kg)	TCLP Lead (mg/l)	Cadmium (mg/kg)	TCLP Cadmium (mg/l)
O-15	3/28/2012	0 - 0.25	5180	4.4	28.6	NA
BC-8	3/18/2013	0 - 0.25	281	0.087	1.49	NA
L-16A1	3/19/2013	0 - 0.25	5180	1.3	17.9	NA
L-16A2	3/19/2013	0 - 0.25	2770	0.041	22.3	NA
OP-12	3/19/2013	0 - 0.25	341	0.076	1.99	NA
HI-7	3/20/2013	0 - 0.25	372	0.077	21.7	NA
HI-6	3/20/2013	0 - 0.25	472	0.074	3.72	NA
M-16A3	3/22/2013	0 - 0.25	9640	9.1	19.4	NA
M-16A1	3/22/2013	0 - 0.25	5000	11.2	20.6	0.15
TP-7	4/15/2013	1	1010	0.6	0.411JL	NA
HI-15	5/7/2013	1 - 2	1030	0.61	2.02	NA

Notes:
1. TCLP data provided by Southwest Geoscience.



STOCKPILE LOCATION

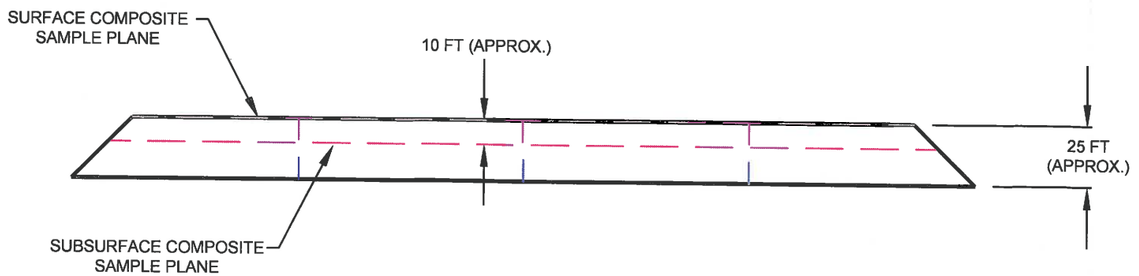


PLAN VIEW
NTS

SAMPLE RESULTS

Sample ID	Date	Cadmium (mg/Kg)	Lead (mg/Kg)
SP-G1 (1')	1/4/2013	0.140J	20.7
SP-G1 (10')	1/4/2013	<0.051	13.5
SP-G2 (1')	1/4/2013	0.126J	30.3
SP-G2 (10')	1/4/2013	0.108J	15.5
SP-G3 (1')	1/4/2013	0.0565J	14.1
SP-G3 (10')	1/4/2013	0.0946J	22.7
SP-G4 (1')	1/4/2013	<0.055	9.64
SP-G4 (10')	1/4/2013	<0.059	10.6
SP-G5 (1')	1/4/2013	<0.052	11.4
SP-G5 (10')	1/4/2013	<0.055	11.2
SP-G6 (1')	1/4/2013	0.0635J	15.9
SP-G6 (10')	1/4/2013	<0.055	11.2
SP-G7 (1')	1/4/2013	<0.052	13.2
SP-G7 (10')	1/4/2013	0.104J	14.6

J - Analyte detected between MDL and RL
< - Sample not detected above the MDL

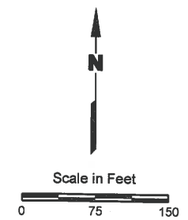


CROSS SECTION
NTS

EXPLANATION

- Sample Grid Line
- Sample Planes
- Composite Sample Location

NOTES:
1. 0-1' and 10'-12' samples were collected as five-part composite samples.
2. Stockpile is comprised of native soil excavated for landfill expansion.
3. Composite samples were collected for analysis to ensure data were representative of entire stockpile.



Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure A1

BACKFILL STOCKPILE INFORMATION

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Data Usability Summary
Exide Recycling Center Landfill Expansion
January 4, 2013 Soil Stockpile Sampling Event
ALS Environmental DATA PACKAGE 1301160

Pastor, Behling & Wheeler, LLC reviewed one data package from ALS Environmental for the analysis of the landfill expansion soil stockpile samples collected January 4, 2013 at the Exide Recycling Center facility, in Frisco, Texas. Data were reviewed for conformance to the requirements of the guidance document, *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. At the time the laboratory data were generated for the project, ALS Environmental was NELAC-accredited under the Texas Laboratory Accreditation Program for the matrices, analytes and methods of analysis requested on the chain-of-custody documentation.

Intended Use of Data: To provide current data on concentrations of cadmium and lead in the soil excavated and stockpiled from the area of the landfill expansion.

Analyses requested included:

- Method SW6020 – Cadmium and Lead

Data were reviewed as described in *Review and Reporting of COC Concentration Data,* (RG-366/TRRP-13) and the results of the review are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the laboratory report in the Exception Reports and case narrative, all of which were included in this review. A Laboratory Review Checklist (LRC) was not requested.

Introduction

Fourteen (14) soil samples were collected and analyzed for cadmium and lead. Table B-1 lists the sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project QA/QC objectives were established as the laboratory control limits for each analysis.

DATA REVIEW / VALIDATION RESULTS

Analytical Results

Qualified sample data for the contaminants of concern at the site are listed in Table B-2. Non-detected results (ND) are reported as less than the value of the method detection limit (MDL). Several analytes

were detected between the MDL and the reporting limit (RL) and were qualified with a "J-flag" to denote that the reported values were considered to be estimated.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table and 2-40(B).

Calibrations

Calibration data was not supplied in the laboratory report.

Blanks

The method blank was adequately prepared and results were reported as non-detected (ND).

Surrogate Recoveries

Surrogate recoveries were not run.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within laboratory QC acceptance limits for both analytes.

Matrix Spike/Matrix Spike Duplicates

MS/MSD precision and accuracy results were within the project-defined QC acceptance criteria for cadmium and lead.

Field Precision

Field duplicate samples were not collected. Laboratory run duplicates had RPD results within the laboratory-defined acceptance criteria.

Field Procedures

Samples were collected using documented SOPs.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the stockpiled soil at the landfill extension.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
SP-G1(1')	1301160-01
SP-G1 (10')	1301160-02
SP-G2 (1')	1301160-03
SP-G2 (10')	1301160-04
SP-G3 (1')	1301160-05
SP-G3 (10')	1301160-06
SP-G4 (1')	1301160-07
SP-G4 (10')	1301160-08
SP-G6 (1')	1301160-09
SP-G6 (10')	1301160-10
SP-G5 (1')	1301160-11
SP-G5 (10')	1301160-12
SP-G7 (1')	1301160-13
SP-G7 (10')	1301160-14

Table B-2. Qualified Analytical Data

Field Identification	Analyte	Qualification	Reason for Qualification
SP-G1(1')	Cadmium	J	Analyte detected between MDL and RL
SP-G2 (1')	Cadmium	J	Analyte detected between MDL and RL
SP-G2 (10')	Cadmium	J	Analyte detected between MDL and RL
SP-G3 (1')	Cadmium	J	Analyte detected between MDL and RL
SP-G3 (10')	Cadmium	J	Analyte detected between MDL and RL
SP-G6 (1')	Cadmium	J	Analyte detected between MDL and RL
SP-G7 (10')	Cadmium	J	Analyte detected between MDL and RL

Prepared by: Kate McCarthy, PG Date: January 28, 2013

ALS Environmental

12-Feb-2013

Vanessa Coleman
Exide Technologies
7471 South Fifth Street
Frisco, TX 75034

Tel: (972) 335-2121
Fax:

Re: LF Expansion

Work Order: **1301160**

Dear Vanessa,

ALS Environmental received 14 samples on 05-Jan-2013 09:40 AM for the analyses presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

The total number of pages in this revised report is 34.

Regards,

Electronically approved by: Luke F. Hernandez

Bernadette A. Fini
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: TX: T104704231-12-10

ALS Environmental **Date:** *12-Feb-13*

Client:	Exide Technologies
Project:	LF Expansion
Work Order:	1301160

TRRP Laboratory Data Package Cover Page

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Exide Technologies
Project:	LF Expansion
Work Order:	1301160

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Bernadette A. Fini

Bernadette A. Fini
Project Manager

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 2/12/2013					
Project Name: LF Expansion			Laboratory Job Number: 1301160					
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 67003, R140945					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	Chain-of-custody (C-O-C)						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	Sample and quality control (QC) identification						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	Test reports						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?	X					
		Were % moisture (or solids) reported for all soil and sediment samples?	X					
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	Surrogate recovery data						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X					
R5	OI	Test reports/summary forms for blank samples						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X					
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	Analytical duplicate data						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	Method quantitation limits (MQLs):						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	Other problems/anomalies						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 2/12/2013					
Project Name: LF Expansion			Laboratory Job Number: 1301160					
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 67003, R140945					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?	X					
		Were percent RSDs or correlation coefficient criteria met?	X					
		Was the number of standards recommended in the method used for all analytes?	X					
		Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		Are ICAL data available for all instruments used?	X					
		Has the initial calibration curve been verified using an appropriate second source standard?	X					
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**						
		Was the CCV analyzed at the method-required frequency?	X					
		Were percent differences for each analyte within the method-required QC limits?	X					
		Was the ICAL curve verified for each analyte?	X					
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X					
S3	O	**Mass spectral tuning:**						
		Was the appropriate compound for the method used for tuning?	X					
		Were ion abundance data within the method-required QC limits?	X					
S4	O	**Internal standards (IS):**						
		Were IS area counts and retention times within the method-required QC limits?	X					
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X					
		Were data associated with manual integrations flagged on the raw data?	X					
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?			X			
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X			
S8	I	**Interference Check Sample (ICS) results:**						
		Were percent recoveries within method QC limits?	X					
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X					
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?	X					
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					
S11	OI	**Proficiency test reports:**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X					
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X					
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?	X					
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X					
		Is documentation of the analyst's competency up-to-date and on file?	X					
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)						
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X					
S16	OI	**Laboratory standard operating procedures (SOPs):**						
		Are laboratory SOPs current and on file for each method performed?	X					

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Reportable Data	
Laboratory Name: ALS Laboratory Group	LRC Date: 2/12/2013
Project Name: LF Expansion	Laboratory Job Number: 1301160
Reviewer Name: Bernadette Fini	Prep Batch Number(s): 67003, R140945

ER#[5]	Description
	No exceptions.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Exide Technologies
Project: LF Expansion
Work Order: 1301160

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1301160-01	SP-G1(1')	Soil		1/4/2013 10:00	1/5/2013 09:40	
1301160-02	SP-G1 (10')	Soil		1/4/2013 10:05	1/5/2013 09:40	
1301160-03	SP-G2 (1')	Soil		1/4/2013 10:10	1/5/2013 09:40	
1301160-04	SP-G2 (10')	Soil		1/4/2013 10:15	1/5/2013 09:40	
1301160-05	SP-G3 (1')	Soil		1/4/2013 10:20	1/5/2013 09:40	
1301160-06	SP-G3 (10')	Soil		1/4/2013 10:23	1/5/2013 09:40	
1301160-07	SP-G4 (1')	Soil		1/4/2013 10:25	1/5/2013 09:40	
1301160-08	SP-G4 (10')	Soil		1/4/2013 10:30	1/5/2013 09:40	
1301160-09	SP-G6 (1')	Soil		1/4/2013 10:55	1/5/2013 09:40	
1301160-10	SP-G6 (10')	Soil		1/4/2013 11:00	1/5/2013 09:40	
1301160-11	SP-G5 (1')	Soil		1/4/2013 11:05	1/5/2013 09:40	
1301160-12	SP-G5 (10')	Soil		1/4/2013 11:10	1/5/2013 09:40	
1301160-13	SP-G7 (1')	Soil		1/4/2013 11:15	1/5/2013 09:40	
1301160-14	SP-G7 (10')	Soil		1/4/2013 11:20	1/5/2013 09:40	

Client:	Exide Technologies
Project:	LF Expansion
Work Order:	1301160

Case Narrative

On February 12, 2013 this report was revised to include TRRP headers with LRC.

LS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G1(1')
Collection Date: 1/4/2013 10:00 AM

Work Order: 1301160
Lab ID: 1301160-01
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.140	J	0.055	0.549	mg/Kg-dry	1	1/8/2013 20:20
Lead	20.7		0.055	0.549	mg/Kg-dry	1	1/8/2013 20:20
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	13.0		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G1 (10')
Collection Date: 1/4/2013 10:05 AM

Work Order: 1301160
Lab ID: 1301160-02
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: **SW6020**			Prep: SW3050A / 1/8/13		Analyst: **JCJ**
Cadmium	U		0.051	0.507	mg/Kg-dry	1	1/8/2013 20:23
Lead	**13.5**		**0.051**	**0.507**	**mg/Kg-dry**	1	1/8/2013 20:23
MOISTURE		Method: **SW3550**					Analyst: **KAH**
Percent Moisture	**15.9**		**0.010**	**0.0100**	**wt%**	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

LS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G2 (1')
Collection Date: 1/4/2013 10:10 AM

Work Order: 1301160
Lab ID: 1301160-03
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.126	J	0.055	0.548	mg/Kg-dry	1	1/8/2013 20:25
Lead	30.3		0.055	0.548	mg/Kg-dry	1	1/8/2013 20:25
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	15.4		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G2 (10')
Collection Date: 1/4/2013 10:15 AM

Work Order: 1301160
Lab ID: 1301160-04
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.108	J	0.050	0.495	mg/Kg-dry	1	1/8/2013 20:32
Lead	15.5		0.050	0.495	mg/Kg-dry	1	1/8/2013 20:32
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	16.3		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

LS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G3 (1')
Collection Date: 1/4/2013 10:20 AM

Work Order: 1301160
Lab ID: 1301160-05
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.0565	J	0.054	0.538	mg/Kg-dry	1	1/8/2013 20:35
Lead	14.1		0.054	0.538	mg/Kg-dry	1	1/8/2013 20:35
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	15.6		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G3 (10')
Collection Date: 1/4/2013 10:23 AM

Work Order: 1301160
Lab ID: 1301160-06
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.0946	J	0.058	0.583	mg/Kg-dry	1	1/8/2013 20:37
Lead	22.7		0.058	0.583	mg/Kg-dry	1	1/8/2013 20:37
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	18.2		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G4 (1')
Collection Date: 1/4/2013 10:25 AM

Work Order: 1301160
Lab ID: 1301160-07
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: **SW6020**			Prep: SW3050A / 1/8/13		Analyst: **JCJ**
Cadmium	U		0.055	0.552	mg/Kg-dry	1	1/8/2013 20:40
Lead	**9.64**		**0.055**	**0.552**	**mg/Kg-dry**	1	1/8/2013 20:40
MOISTURE		Method: **SW3550**					Analyst: **KAH**
Percent Moisture	**16.2**		**0.010**	**0.0100**	**wt%**	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

LS Environmental

Date: *12-Feb-13*

ent: Exide Technologies
)ject: LF Expansion
nple ID: SP-G7 (10')
llection Date: 1/4/2013 11:20 AM

Work Order: 1301160
Lab ID: 1301160-14
Matrix: SOIL

alyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
TALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
admium	0.104	J	0.054	0.539	mg/Kg-dry	1	1/8/2013 21:01
ead	14.6		0.054	0.539	mg/Kg-dry	1	1/8/2013 21:01
)ISTURE		Method: SW3550					Analyst: KAH
ercent Moisture	16.2		0.010	0.0100	wt%	1	1/8/2013 16:30

ote: See Qualifiers Page for a list of qualifiers and their explanation.

Work Order: 1301160
Client: Exide Technologies
Project: LF Expansion

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 67003	**Test Name:** Metals					
1301160-01A	SP-G1(1')	Soil	1/4/2013 10:00:00 AM		1/8/2013 11:00 AM	1/8/2013 08:20 PM
1301160-02A	SP-G1 (10')		1/4/2013 10:05:00 AM		1/8/2013 11:00 AM	1/8/2013 08:23 PM
1301160-03A	SP-G2 (1')		1/4/2013 10:10:00 AM		1/8/2013 11:00 AM	1/8/2013 08:25 PM
1301160-04A	SP-G2 (10')		1/4/2013 10:15:00 AM		1/8/2013 11:00 AM	1/8/2013 08:32 PM
1301160-05A	SP-G3 (1')		1/4/2013 10:20:00 AM		1/8/2013 11:00 AM	1/8/2013 08:35 PM
1301160-06A	SP-G3 (10')		1/4/2013 10:23:00 AM		1/8/2013 11:00 AM	1/8/2013 08:37 PM
1301160-07A	SP-G4 (1')		1/4/2013 10:25:00 AM		1/8/2013 11:00 AM	1/8/2013 08:40 PM
1301160-08A	SP-G4 (10')		1/4/2013 10:30:00 AM		1/8/2013 11:00 AM	1/8/2013 08:42 PM
1301160-09A	SP-G6 (1')		1/4/2013 10:55:00 AM		1/8/2013 11:00 AM	1/8/2013 08:44 PM
1301160-10A	SP-G6 (10')		1/4/2013 11:00:00 AM		1/8/2013 11:00 AM	1/8/2013 08:47 PM
1301160-11A	SP-G5 (1')		1/4/2013 11:05:00 AM		1/8/2013 11:00 AM	1/8/2013 08:49 PM
1301160-12A	SP-G5 (10')		1/4/2013 11:10:00 AM		1/8/2013 11:00 AM	1/8/2013 08:52 PM
1301160-13A	SP-G7 (1')		1/4/2013 11:15:00 AM		1/8/2013 11:00 AM	1/8/2013 08:54 PM
1301160-14A	SP-G7 (10')		1/4/2013 11:20:00 AM		1/8/2013 11:00 AM	1/8/2013 09:01 PM

ALS Environmental

Work Order: 1301160
Client: Exide Technologies
Project: LF Expansion

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R140945 **Test Name:** Moisture						
1301160-01A	SP-G1(1')	Soil	1/4/2013 10:00:00 AM			1/8/2013 04:30 PM
1301160-02A	SP-G1 (10')		1/4/2013 10:05:00 AM			1/8/2013 04:30 PM
1301160-03A	SP-G2 (1')		1/4/2013 10:10:00 AM			1/8/2013 04:30 PM
1301160-04A	SP-G2 (10')		1/4/2013 10:15:00 AM			1/8/2013 04:30 PM
1301160-05A	SP-G3 (1')		1/4/2013 10:20:00 AM			1/8/2013 04:30 PM
1301160-06A	SP-G3 (10')		1/4/2013 10:23:00 AM			1/8/2013 04:30 PM
1301160-07A	SP-G4 (1')		1/4/2013 10:25:00 AM			1/8/2013 04:30 PM
1301160-08A	SP-G4 (10')		1/4/2013 10:30:00 AM			1/8/2013 04:30 PM
1301160-09A	SP-G6 (1')		1/4/2013 10:55:00 AM			1/8/2013 04:30 PM
1301160-10A	SP-G6 (10')		1/4/2013 11:00:00 AM			1/8/2013 04:30 PM
1301160-11A	SP-G5 (1')		1/4/2013 11:05:00 AM			1/8/2013 04:30 PM
1301160-12A	SP-G5 (10')		1/4/2013 11:10:00 AM			1/8/2013 04:30 PM
1301160-13A	SP-G7 (1')		1/4/2013 11:15:00 AM			1/8/2013 04:30 PM
1301160-14A	SP-G7 (10')		1/4/2013 11:20:00 AM			1/8/2013 04:30 PM

WorkOrder: 1301160
InstrumentID: Balance1
Test Code: MOIST_SW3550
Test Number: SW3550
Test Name: Moisture

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** wt%

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Percent Moisture	MOIST	0	0.010	0.010

METHOD DETECTION / REPORTING LIMITS

WorkOrder: 1301160
InstrumentID: ICPMS05
Test Code: ICP_S_Low
Test Number: SW6020
Test Name: Metals

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Cadmium	7440-43-9	0.081	0.050	0.50
A	Lead	7439-92-1	0.21	0.050	0.50

Batch ID: **67003** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-010813-67003** Units: **mg/Kg** Analysis Date: **1/8/2013 07:47 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077552** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	U	0.50								
Lead	U	0.50								

LCS Sample ID: **MLCSS1-010813-67003** Units: **mg/Kg** Analysis Date: **1/8/2013 07:49 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077553** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	8.699	0.50	10	0	87	80-120	0			
Lead	8.76	0.50	10	0	87.6	80-120	0			

MS Sample ID: **1301113-01BMS** Units: **mg/Kg** Analysis Date: **1/8/2013 08:03 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077559** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
.nium	6.479	0.41	8.131	0.2344	76.8	75-125	0			
Lead	19.19	0.41	8.131	10.26	110	75-125	0			

MSD Sample ID: **1301113-01BMSD** Units: **mg/Kg** Analysis Date: **1/9/2013 02:13 PM**

Client ID: Run ID: **ICPMS05_130109A** SeqNo: **3078203** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	6.775	0.43	8.666	0.2344	75.5	75-125	6.479	4.47	25	
Lead	20.49	0.43	8.666	10.26	118	75-125	19.19	6.53	25	

DUP Sample ID: **1301113-01BDUP** Units: **mg/Kg** Analysis Date: **1/8/2013 07:54 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077555** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	0.2225	0.42	0	0	0	0-0	0.2344	0	25	J
Lead	10.83	0.42	0	0	0	0-0	10.26	5.44	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Exide Technologies
Work Order: 1301160
Project: LF Expansion

QC BATCH REPORT

Batch ID: **67003** Instrument ID **ICPMS05** Method: **SW6020**

PDS Sample ID: **1301113-01BBS** Units: **mg/Kg** Analysis Date: **1/8/2013 08:08 PM**
Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077561** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	7.278	0.41	8.252	0.2344	85.3	75-125	0			
Lead	17.42	0.41	8.252	10.26	86.7	75-125	0			

SD Sample ID: **1301113-01B DIL SX** Units: **mg/Kg** Analysis Date: **1/8/2013 07:56 PM**
Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077556** Prep Date: DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Cadmium	U	2.1	0	0	0	0-0	0.2344	0	10	
Lead	10.89	2.1	0	0	0	0-0	10.26	6.12	10	

The following samples were analyzed in this batch:

1301160-01A	1301160-02A	1301160-03A
1301160-04A	1301160-05A	1301160-06A
1301160-07A	1301160-08A	1301160-09A
1301160-10A	1301160-11A	1301160-12A
1301160-13A	1301160-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Exide Technologies
Work Order: 1301160
Project: LF Expansion

QC BATCH REPORT

L . ID: **R140945** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1301160-14ADUP** Units: **wt%** Analysis Date: **1/8/2013 04:30 PM**

Client ID: **SP-G7 (10')** Run ID: **BALANCE1_130108C** SeqNo: **3077749** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.15	0.010	0	0	0	0-0	16.19	6.62	20	

The following samples were analyzed in this batch:

1301160-01A	1301160-02A	1301160-03A
1301160-04A	1301160-05A	1301160-06A
1301160-07A	1301160-08A	1301160-09A
1301160-10A	1301160-11A	1301160-12A
1301160-13A	1301160-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Client: Exide Technologies
Project: LF Expansion
WorkOrder: 1301160

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
wt%	

ALS Environmental

Sample Receipt Checklist

ent Name: **EXIDE TECHNOLOGIES** Date/Time Received: **05-Jan-13 09:40**

Work Order: **1301160** Received by: **RDH**

Checklist completed by Robert D. Harris (eSignature) 05-Jan-13 (Date) Reviewed by: Bernadette A. Fini (eSignature) 05-Jan-13 (Date)

Matrices: soils
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
ontainer/Temp Blank temperature in compliance?	Yes ☑	No ☐	
emperature(s)/Thermometer(s):	1.6c c/u	005	
Cooler(s)/Kit(s):	5124		
Date/Time sample(s) sent to storage:	1/5/13 10:10		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

SRC Page 1 of 1

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 71428

1301160

EXIDE TECHNOLOGIES: Exide Technologies

Project: LF Expansion

ALS Environmental

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	LF Expansion	A	~~TCLP Metals (SW 846) Pb & Cd~~
Work Order		Project Number		B	Total lead & Cadmium
Company Name	Exide Technologies	Bill To Company	Exide Technologies	C	
Send Report To	Vanessa Coleman	Invoice Attn	Vanessa Coleman	D	
Address	7471 South Fith Street	Address	7471 South Fith Street	E	
				F	
City/State/Zip	Frisco, TX 75034	City/State/Zip	Frisco, TX 75034	G	
Phone	(972) 335-2121	Phone	(972) 335-2121	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SP-G1(1')	11/4/13	1000	S	Neat	1		X									
2	SP-G1(10')		1005														
3	SP-G2(1')		1010														
4	SP-G2(10')		1015														
5	SP-G3(1')		1020														
6	SP-G3(10')		1023														
7	SP-G4(1')		1025														
8	SP-G4(10')		1030														
9	SP-G6(1')		1055														
10	SP-G6(10')		1100														

Sampler(s) Please Print & Sign:

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Std 10 WK Days ☐ 5 WK Days ☑ Other 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: [signature] Date: 11/4/13 Time: 1200

Received by: FedEx 8013 7714 6221

Relinquished by: Date: Time:

Received by (Laboratory): [signature] 11/5/13 0940

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: 48 Hr TAT Copy to Tim.Jennings@FaWilc.com

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any cl[illegible] must be made in writing once samples and COC Form have been submitted to ALS [illegible]nmental.
2. Unless [illegible]wise agreed in a formal contract, services provided by ALS Environmental are expres[illegible]ited to the terms and conditions stated on the reverse.
3. The Cha[illegible] of Custody is a legal document. All information must be completed accurately.

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Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
[illegible], PA +1 717 505 5280

Chain of Custody Form

2 of 2

COC ID: 66345

ALS Project Manager: | ALS Work Order #: 1501160

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Landfill Expansion	A	~~TCLP Metals (Ag/Ba/Cr) Pb & Cd~~
Work Order		Project Number		B	Total lead & Cadmium
Company Name	Exide Technologies	Bill To Company	Exide Technologies	C	
Send Report To	Vanessa Coleman	Invoice Attn	Vanessa Coleman	D	
Address	7471 South Fith Street	Address	7471 South Fith Street	E	
				F	
City/State/Zip	Frisco, TX 75034	City/State/Zip	Frisco, TX 75034	G	
Phone	(972) 335-2121	Phone	(972) 335-2121	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SP-G5(1')	1/4/13	1105	S	Neat	1		X									
2	SP-G5(10')	"	1110	"	"	"											
3	SP-G7(1')	"	1115	"	"	"											
4	SP-G7(10')	"	1120	"	"	"											
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign | Shipment Method | Required Turnaround Time: (Check Box) ☐ Std 10 WK Days ☐ 5 WK Days ☑ Other ☐ 2 WK Days ☐ 24 Hour | Results Due Date:

Relinquished by: [signature] Date: 1/4/13 Time: 12:00 Received by: Fed Ex 801377140221

Relinquished by: Date: Time: Received by (Laboratory): A.L.R. 1/5/13 0840

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 48 Hr TAT Copy to: t.m.jennings@pbwllc.com

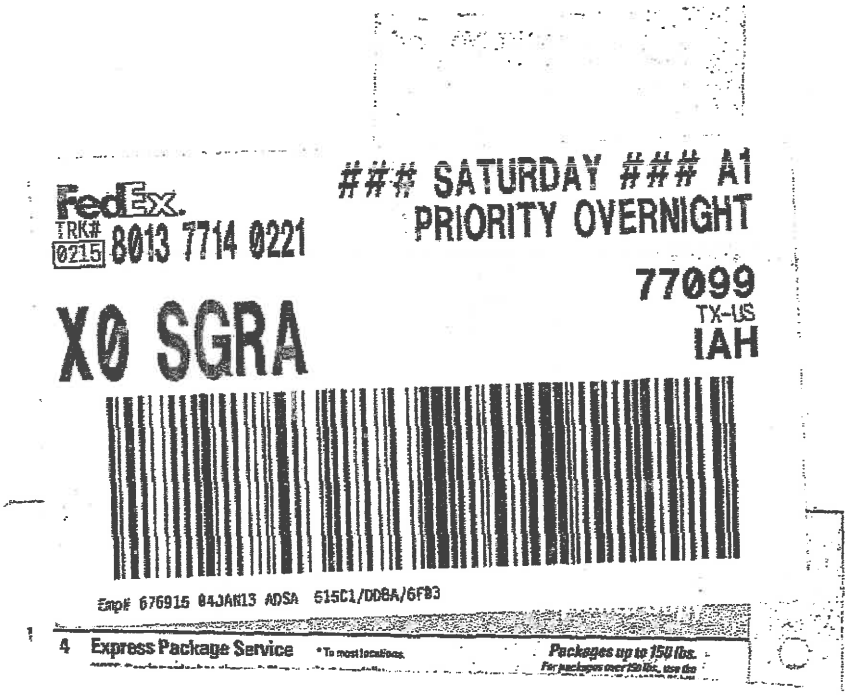
Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

1501160



ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL	Seal Signature/Initials
Date: 1/4/13 Time: 1200	Date: 1/5/13
Name: [illegible]	
Company: [illegible]	

APPENDIX 6

Perimeter Air Monitoring and Dust Control Plan

Response Action Soil Sampling and Analysis Plan

UNDEVELOPED BUFFER PROPERTY RESPONSE ACTION

PERIMETER AIR MONITORING AND DUST CONTROL PLAN

EXIDE TECHNOLOGIES
FRISCO, TEXAS

PREPARED BY:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
(512) 671-3434

APRIL 1, 2014

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LIST OF APPENDICES

1.0 INTRODUCTION

Pastor, Behling & Wheeler, LLC (PBW) has prepared this Perimeter Air Monitoring and Dust Control Plan (the Plan) in conjunction with Exide Technologies and Remediation Services Inc. (RSI) to identify the measures that will be taken to monitor and minimize emissions associated with response action activities at the Exide Technologies' Undeveloped Buffer Property (the Site) in Frisco, Texas. Specifically, this Plan outlines the requirements and methods for monitoring ambient air quality during planned remediation activities for particulate matter (dust), lead and cadmium, and identifies the steps that will be taken to reduce the potential for off-site impacts from dust generating activities during remediation activities. The Plan includes activity-specific dust control criteria and dust suppression procedures. Best management practices (BMPs) will be implemented throughout the project. BMPs include wetting active remediation areas, minimizing or ceasing activity during periods of high wind (greater than 20 miles per hour), wetting paved areas, wetting unpaved areas, application of dust suppressant materials as well as covering stockpiles. The Plan provides specific information about the generation and control of dust emissions during the excavation of soil, stockpiling of soil, loading of soil and other activities associated with the remediation activities.

1.1 Project Overview

The response action consists of excavating lead- or copper-affected soils, stockpiling the soil for waste characterization, and then disposal of the material. Disposal of material will consist of transporting soil to the on-site landfill (Class 2 non-hazardous waste) or authorized off-site disposal facilities (Class 2 non-hazardous waste, Class 1 non-hazardous waste, or hazardous waste). Soil excavation, soil stockpiling, soil loading, and placement of soils in the Class 2 on-site landfill are considered dust-generating activities for the purpose of this plan. Affected soils requiring remediation are found at various locations on the Site, but generally in the interior of the Exide Technologies property. The areas to be excavated comprise approximately 12 acres and represent approximately 18,000 cubic yards of soil.

Air quality monitoring will consist of ambient air monitoring using NIOSH Method 7303 to evaluate lead and cadmium concentrations in dust, and E-Bam particulate monitors to evaluate dust concentrations. Monitoring will be conducted to ensure that potential off-site impacts are mitigated. Air quality will be monitored by RSI during the remediation activities.

The primary objectives of the perimeter air monitoring are to:

- Develop a relationship between particulate (dust) levels and concentrations of lead and cadmium, so that the particulate measurements can be used as a surrogate;
- Determine if concentrations of lead and cadmium and particulate emissions are in excess of air "Take Action" or "Stop Work" levels established for the Site; and
- Ensure that engineering controls and work practices help minimize potential off-site impacts.

The monitoring plan will help ensure that RSI reacts quickly and makes appropriate changes to dust control measures as needed. Air quality will be measured and documented at air quality monitoring stations during remediation activities in accordance with this plan.

2.0 ORGANIZATION OF PLAN

This plan addresses the air monitoring to be performed during dust-generating remediation activities and describes the procedures to be used to minimize dust emissions. The air monitoring portion of the plan describes continuous perimeter monitoring for particulates (PM_{10}), explains how the relationship between particulate, lead, and cadmium will be established and describes how the "Take Action" and "Stop Work" levels will be identified and implemented for particulates. In addition, the plan describes how samples will be collected to directly measure lead and cadmium in dust and how those data will be used. The dust control procedures to be used during remediation activities are described after the air monitoring portion of the Plan.

3.0 PARTICULATE MONITORING

3.1 Equipment

Real-time particulate air monitors (e.g., E-BAM Particulate Monitor or equivalent) equipped with an omni-directional air intake device and a "PM_{10}" impactor head will be used at the Site to monitor dust levels at or near the Exide property boundaries during remediation activities that could generate dust. Real-time data from the downwind particulate monitors is evaluated in 30-minute and 60-minute averaged blocks to provide immediate comparison to "Take Action" and "Stop Work" level criteria. If there is a calm wind condition (i.e. less than 1 mile per hour wind averaged over a 30-minute period), the upwind monitor will be treated as a downwind monitor. The data collection and reporting system which utilizes data generated by this equipment is described further in Section 3.5. Appendix A provides specific information regarding the E-BAM Particulate Monitors that will be utilized during Site remediation.

3.2 Monitoring Locations

At least one upwind and three downwind monitoring locations will be established each day dust-generating activities are to be performed, and monitors will be placed to ensure adequate coverage to minimize the potential for off-site impacts to property beyond the Site and the Exide former operating plant (FOP). In the event that multiple activities are being conducted concurrently (i.e., multiple remediation areas), the downwind monitoring network will be used to monitor all activities to the extent practicable. If wind direction and remediation activity locations warrant, additional monitors may be added to ensure adequate downwind coverage. If particulate-related "Take Action" or "Stop Work" criteria are exceeded, dust mitigation procedures applicable to each activity will be implemented. RSI will utilize National Weather Service forecasts and review current conditions and recent trends from an onsite meteorological station to position the monitors each morning prior to the start of any dust-generating remediation activities. Monitor location information will be determined by GPS and recorded. Wind speed and direction will be recorded and the data sent to onsite personnel as described in Section 3.5. If there is a 90 degree change in the prevailing wind direction averaged over a 30-minute period during the work day, the downwind monitors will be appropriately relocated and dust-generating work will be suspended until the monitors resume operation.

3.3 "Take Action" and "Stop Work" Levels Using Particulates as a Surrogate for Lead and Cadmium

The 2008 National Ambient Air Quality Standards (NAAQS) standard for lead, and the Texas Effects Screening Level (ESL) for cadmium have been utilized to establish "Take Action" and "Stop Work" levels for real-time particulate monitoring that will minimize off-site migration of dust associated with the remediation activities. The lead and cadmium-based PM_{10} surrogate levels will be calculated based upon correlations derived from project monitoring data and the more stringent of the two surrogate levels (i.e., lead or cadmium) will be used to establish the ongoing "Take Action" and "Stop Work" levels for PM_{10}.

3.3.1 Establishing Particulate "Take Action" and "Stop Action" Levels for Lead

The target level for lead on a one-hour basis, TPb, has been derived from the current (2008) NAAQS for Pb, 0.15 $\mu g/m^3$, which is expressed as a three-month rolling average. The action level for lead (AL^{Pb}) derived from the NAAQS will be implemented on the basis of 30-minute and 60-minute block-averaged particulate readings. The particulate "Take Action" level notification will be based on a 30-minute downwind block average ($TAL^{PM\text{-}30}$). The particulate "Stop Work" level will be set on 30-minute ($SWL^{PM\text{-}30}$) and 60-minute ($SWL^{PM\text{-}60}$) downwind block averages.

According to Appendix D, "Averaging Period Concentration Estimates" in EPA-454/R-92-024 "Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants (Revised)" December 1992, the appropriate multiplying factor in converting one-hour averaged concentrations to three-month averages is 0.1. Therefore, to set an equivalent one-hour allowable concentration consistent with the three-month averaged Pb NAAQS, the NAAQS value of 0.15 $\mu g/m^3$ is divided by 0.1, yielding 1.5 $\mu g/m^3$ = 0.0015 mg/m^3 Pb = TPb. Until the AL^{Pb} is established as described below, the default 30-minute block average "Take Action" level for lead will be the default $TAL^{PM\text{-}30}$ of 0.1 mg/m^3, and the 30-minute block average "Stop Work" Level ($SWL^{PM\text{-}30}$) for lead will be 0.2 mg/m^3 (two times the default $TAL^{PM\text{-}30}$) value. The default 60-minute block average ($SWL^{PM\text{-}60}$) will be 0.1 mg/m^3.

The AL^{Pb} will be calculated by the following method:

The lead content fraction (FPb), taking into account downwind air sampling stations, will be determined from project-collected particulate and lead concentration data based upon the following relationship in the measured downwind particulate monitor data. Any sample results for lead which are reported from the laboratory as being below the detection limits will be entered into this calculation as ½ of the reported detection limit rather than as zero. The calculation of FPb will be completed using the data from each of the three or more downwind particulate monitor and air sampler pairs. The data from the monitor will be averaged for use in the calculation.

$\frac{\text{Pb mg/m}^3}{\text{Dust/PM}_{10}\text{ mg /m}^3}$	=	FPb (unitless)

The highest of the calculated values from the three downwind particulate monitor and air sampler pairs will be the FPb. The AL^{Pb} for the particulate monitors will then be calculated as follows:

$\frac{\text{TPb } 0.0015 \text{ mg/m}^3}{\text{FPb (unitless)}}$	=	AL^{Pb} mg/m³ (as particulates, PM_{10})

3.3.2 Establishing Particulate "Take Action" and "Stop Work" Levels for Cadmium

The Texas Commission on Environmental Quality (TCEQ) short-term Effects Screening Level for cadmium is 0.0001 mg/m³. Until the AL^{Cd} is established as described below, the default TAL^{PM-30} for cadmium will be 0.1 mg/m³, and the default SWL^{PM-30} will be 0.2 mg/m³ (two times the default TAL^{PM-30}). The default SWL^{PM-60} will be 0.1 mg/m³.

In order to derive a comparable PM_{10} "Take Action" level, the AL for cadmium based upon the content of cadmium in the measured dust (FCd) is determined from the downwind project-collected particulate and cadmium concentration data by the following equations. Any sample results for cadmium which are reported from the laboratory as being below the detection limits will be entered into this calculation as ½ of the reported detection limit rather than as zero. The calculation of FCd will be completed using the data from each of the three or more downwind particulate monitor and air sampler pairs. The data from the monitors will be averaged for use in the calculation.

$\frac{\text{Cd mg/m}^3}{\text{Dust/PM}_{10}\text{ mg /m}^3}$	=	FCd (unitless)

The highest of the calculated values from the three downwind particulate monitor and air sampler pairs will be the FCd. The AL^{Cd} for the dust monitors for the action levels described above will then be calculated as follows:

$\frac{\text{(ESL Cd 0.0001) mg/m}^3}{\text{FCd}}$	=	AL^{Cd} mg/m^3 (as particulates, PM_{10})

3.3.3 Establishing Particulate Take Action and Stop Work Levels as Surrogate

The 30-minute block average "Take Action" level (TAL^{PM-30}) and 60-minute "Stop Action" level (SWL^{PM-60}) will be the LOWER of the calculated AL^{Pb} and AL^{Cd}. In no event will the TAL^{PM-30} and the SWL^{PM-60} be greater than 0.15 mg/m^3. The 30-minute block average "Stop Action" level (SWL^{PM-30}) will be two times the TAL^{PM-30}.

3.4 "Stop Work" Level for Wind

A wind speed "Stop Work" level notification will be set on a one-minute block average using data from the on-site meteorological station. If the sustained wind speed (the wind speed obtained by averaging the measured values over a one minute period) exceeds 20 miles per hour, all active soil excavation, stockpiling, treatment and loading must cease until the sustained wind speed declines to 20 miles per hour or lower. Non-dust producing activities (equipment maintenance, sampling etc.) may still be conducted during these periods

3.5 Particulate Monitors, Wind Data Monitoring, and Notifications

3.5.1 Particulate Monitors

The data obtained from the particulate monitors will be monitored at a remote location by Field Data Solutions (FDS). FDS hosts and manages a computer based monitoring system which will provide "Take Action" and "Stop Work" level notifications to both field and management personnel on a real time basis as well as provide real time access to values from each instrument. Each of the E-BAM monitors will be equipped with a wireless modem to transmit data, and

cellular communication gateways will be installed at the site to act as central communication hubs.

3.5.2 Wind Speed and Direction Data Monitoring

Wind information (speed and direction) will be monitored using the on-site weather station and the data transmitted to FDS directly via telemetry. The wind direction data will be integrated with the FDS monitoring system to provide "Stop Work" level notifications to both field and management personnel on a real time basis as well as provide real time access to the current wind direction.

3.5.3 Notifications

Notifications of exceedances of the particulate or wind speed "Take Action" or "Stop Work" levels will be sent via text message or email to field personnel. Notifications to the field office (RSI) will be sent via email. The notifications will be sent to RSI's on-site Project Manager, Air Monitoring/Dust Control Technician, and any designated Consultant oversight personnel. The notifications will be sent as a "Take Action" level notification or a "Stop Work" level notification. The Dust Control Technician will be the primary individual responsible for monitoring the notifications and ordering implementation of dust mitigation procedures. However, all of these individuals will have the authority to order implementation of dust mitigation procedures, if needed.

3.5.4 Stop Work Criteria for Monitors

If the signal from either the downwind particulate monitors or the onsite weather system is lost for five minutes or more, all dust-generating activities will be suspended until the downwind particulate monitors and the on-site weather system are operational and the signal to the FDS system is re-established.

3.6 Dust Suppression Measures

3.6.1 Particulate "Take Action" Levels

If the 30-minute average PM_{10} concentration at a downwind monitor exceeds the "Take Action" level (TAL^{PM-30}) provided in Table 1, RSI will immediately implement increased dust suppression activities as described in Section 6.

3.6.2 Particulate "Stop Work" Levels

If the one-hour (60-minute) average or thirty-minute (30-minute) average PM_{10} concentration at a downwind monitor exceeds the applicable "Stop Work" level presented in Table 1, RSI will immediately stop all facility dust generating activities. During the work stoppage period (minimum 15 minutes), RSI must make dust suppression adjustments to reduce airborne particulate matter concentrations below the "Take Action" level concentration for particulates. The dust suppression adjustments are described in Section 6.

After dust suppression adjustments have been implemented (minimum 15-minute period), work may resume. After the dust suppression activities have been revised and work has resumed, the air monitoring technician will continuously monitor the dust levels for a 30-minute period utilizing the available real time data to ensure the dust suppression adjustments are effective. Adjustments to dust suppression activities will be made if needed. If particulate concentration "Stop Work" levels for the same averaging period are exceeded at a downwind particulate monitor twice in one work day, RSI must immediately stop work for the remainder of that work day and design and implement a more effective dust control program prior to resuming work the following work day. During this period, equipment maintenance, decontamination, sampling and other non dust-producing activities may be performed.

3.6.3 Visible Dust

If visible dust is present in the excavation area, increased wetting of the area using water trucks and spray misters will be implemented. If visible dust is observed leaving the active excavation area, work will stop until additional dust control measures are implemented as described in Section 6.

4.0 PERIMETER AIR SAMPLES COLLECTED FOR LABORATORY ANALYSES

4.1 Metals Analyses

Air samples will be collected upwind and downwind at the same location as the E-BAM monitors for laboratory analysis of both lead and cadmium during remediation activities using a low volume particulate air sampler. This analytical data will be correlated with the real-time particulate concentration data collected by the E-BAM monitors on a weekly basis, provided validated sampling results are received in a timely manner, and at a minimum every two weeks. Two weeks of analytical data will be correlated with the corresponding real-time particulate concentration data collected by the E-BAM monitors to establish a two-week rolling average. The lowest correlated particulate "Take Action" level for cadmium or lead calculated from the averaged data from each of the three downwind particulate monitor and air sampler pairs will be utilized for the dust monitors TAL^{PM-30} and SWL^{PM-60} until the next correlation is performed.

Air samples for these metals analysis will be collected by RSI at least three times per week during active excavation activities. Samples will not be collected on days when excavation or soil loading activities are not occurring.

Air samples for metals analysis will be collected over a full working shift (typically eight – ten hours) using a Gilian Model GilAir5 air sampling pump or equivalent. The intakes of the filter cassettes are positioned adjacent to the inlet of the co-located E-BAM air inlet. The inlet port of the filter is in a downward position. The air sampling interval may be less than eight hours in the event of inclement weather during the air sampling period (such as severe thunderstorms). Air samples will be collected by attaching laboratory-provided air sample filter cartridges (0.8-micrometer mixed cellulose ester membrane filter cartridge) to the pump, and setting the air sample filter cartridges approximately five feet above ground level at the E-BAM monitor locations, which are at or near the property lines both upwind and downwind. When the downwind air samplers are relocated with the E-BAM monitors due to a 90 degree change in the prevailing wind direction, averaged over a 30-minute period, the air samplers will be shut off during the relocation and started in the new location without a filter change. The air sample pumps will be set at a flow rate of approximately three to four liters per minute, thereby resulting in an air sample volume of approximately 1800 - 2400 liters per air sample.

Following air sample collection, the air sample cartridges/tubes will be securely capped, labeled, and delivered with chain of custody documentation to ALS Laboratory Group, in Salt Lake City, Utah for analysis of lead and cadmium. ALS is accredited by the TCEQ for analysis of environmental samples and is accredited by the American Industrial Hygiene Association (AIHA) for analysis of air samples and lead in soil, dust, paint and air. Laboratory analyses will be performed on an expedited 24-hour turnaround if possible. Metals will be analyzed using NIOSH Method 7303 (see Appendix B). This method is specifically accredited by the AIHA.

Laboratory data will be validated by Exide's consultant and provided to the TCEQ within two business days of receipt of validated analytical results, excluding the day that the results are received. If data are received that cannot be validated, an e-mail notification will be provided to the TCEQ within two business days with a brief description of the issue(s). Upon receipt of the corrected data from the laboratory, Exide's consultant will validate and provide to TCEQ as described above.

4.2 Metals Concentrations "Take Action" Levels

Following receipt of the lead and cadmium analytical laboratory reports, the analytical data from the downwind air samplers will be compared to the site-specific lead and cadmium "Take Action" levels provided on Table 1. The "Take Action" levels for the lead and cadmium sample results are set at 75% of the "Stop Work" levels (see Section 4.3). If either concentration in the downwind samples exceeds the applicable "Take Action" level, the RSI will immediately implement increased dust suppression activities as described in Section 6.

4.3 Metals Concentrations Stop Work Levels

Following receipt of the lead and cadmium analytical laboratory reports, the analytical data from the downwind air samplers will be compared to the "Stop Work" levels shown on Table 1. The "Stop Work" limit for lead has been derived from the current (2008) NAAQS for Pb, adjusted as appropriate to address the differences in averaging periods. According to Appendix D "Averaging Period Concentration Estimates" in EPA-454/R-92-024 "Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants (Revised)" December 1992, the appropriate multiplying factor in converting eight-hour averaged concentrations to three-month averages is 0.14. Accordingly, the NAAQS value of 0.15 $\mu g/m^3$ is divided by 0.14, yielding

1.07 $\mu g/m^3$ average concentrations as the lead "Stop Work" level. For cadmium, the TCEQ short term ESL of 0.1 $\mu g/m^3$ average concentration is the "Stop Work" level.

If the lead or cadmium "Stop Work" levels are exceeded by results from a downwind air sampler, RSI will immediately stop all excavation and soil handling activities and design and implement a more effective dust control program prior to resuming work. The additional dust suppression activities are described in Section 6.

Table 1 provides the default action levels and responses for particulates, lead, and cadmium. When sufficient site data has been collected following the start of the remediation activities, the action and stop work levels for particulates will be updated based upon the relationship of particulate concentration and lead and cadmium concentrations utilizing the formulas in Section 3.3.1 and 3.3.2, respectively. Take Action and Stop Work levels will be updated weekly, provided timely sampling results are received, and at least every two weeks based upon the relationship between dust and measured metals concentrations.

Table 1. Action Levels and Response

Contaminant of Concern	Monitoring Method	Frequency of Monitoring	Take Action Level (Increase Dust Suppression)	Stop Work Level
Particulate Matter	Visual		Visible dust within the active excavation area – Implement additional dust control measures.	Dust leaving the excavation area perimeter – Stop Work. Implement additional dust control measures.
	PM_{10} Downwind Particulate Monitors	30-minute block average	$PM_{10} > TAL^{PM-30}$ Default $TAL^{PM-30} = 0.10$ mg/m³ average 30-minute concentration – Implement additional dust control measures.	$PM_{10} > SWL^{PM-30}$ Default SWL^{PM-30} 0.20 mg/m³ (or, two times default TAL^{PM-30}) average 30-minute concentration – Stop Work. Implement additional dust control measures.
	PM_{10} Downwind Particulate Monitors	60-minute block average		$PM_{10} > SWL^{PM-60}$ Default SWL^{PM-60} = 0.10 mg/m³ average hourly concentration – Stop Work. Implement additional dust control measures.
Lead	Low Volume Particulate Samplers	Three days per week	Take action level = 0.8 µg/m³ – Implement additional dust control measures.	Stop Work = 1.07 µg/m³ average concentration.
Cadmium	Low Volume Particulate Samplers	Three days per week	Take Action level = 0.075 µg/m³ – Implement additional dust control measures.	Stop Work = 0.100 µg/m³ average concentration (TCEQ short term Cd ESL).

5.0 DUST CONTROL

Control of dust will be a high priority during remediation activities. The main mechanism for dust control method during remediation activities will be the application of water using fine water mist to the area being actively excavated using a water truck with spray hoses. A water truck and a dust control technician will be assigned to each excavation team. Soil excavation will not proceed unless the water truck and technician are available for use. In addition, one or more large area misters (e.g., Dust Boss DB 60 with oscillation or equivalent equipment) will be available as an additional dust suppression device to be used when the direct application of water to the area being excavated using the water truck and dust control technician is ineffective. The airborne dust wet suppression system resembles a snow making machine and can cover a large area (approximately ½-acre per machine) with a fine mist of water, effectively controlling dust. Descriptive literature on the Dust Boss DB 60 is included in Appendix C. Only potable water will be used for dust control purposes.

Proactive controls will be instituted to reduce the amount of dust generation during Site activities, including enforcement of low speed limits for vehicular traffic, stopping dust-generating during high wind conditions, decontamination of trucks leaving the Site, and height limits for soil stock piles. The size of stockpiles will be limited to 250 cubic yards with an area of approximately 30 x 30 feet and height of approximately 8 feet. When not actively being worked, stockpiles will be covered to reduce dust emissions and prevent infiltration/runoff during rain events.

5.1 TRAINING OF PERSONNEL

RSI will implement a dust control training program for all Site personnel. This training program will review the potential sources of dust, individual responsibilities, and actions for controlling dust as described in this Plan. The training will emphasize the importance of dust control to the overall success of the remediation activities and familiarize Site personnel with the air monitoring requirements and appropriate dust control procedures that must be adhered to in accordance with this plan to minimize dust generation.

5.2 INSPECTION AND MAINTENANCE

Dust suppression equipment will be inspected at least once a week and properly maintained. RSI will maintain records of the weekly inspections.

6.0 POTENTIAL DUST GENERATION ACTIVITIES AND PROPOSED CONTROLS

Remediation activities will have the potential to generate emissions in the form of fugitive dust. Dust control methods will vary based on the activities occurring at the Site. Dust control methods are summarized by source below. Table 6-1 describes the activities to be conducted during the remediation activities which have the potential to generate dust and the respective dust control measures.

Table 6-1. Potential Dust Generation Activities and Proposed Control

Activity	Proposed Controls
General Dust Suppression - All Dust-Generating Activities	Water spray/mist to wet excavation areas and use of airborne dust wet suppression system as needed for dust generating activities. Adjust remediation activities. Suspend dust-generating activities under high wind conditions until sustained wind speed is below 20 mph.
Truck Traffic	Wetting unpaved and paved haul roads prior to hauling activities each morning and during working hours as needed. Lower speed limits to reduce dust generation. Remove loose material before truck exits work area.
Excavation	Water spray/mist to wet excavation areas and use of airborne dust wet suppression system as needed for dust generating activities. Adjust excavation activities. Suspend work under high wind conditions.
Soil Stockpiling	Use of airborne dust wet suppression system. Water spray/mist work area prior to beginning work and as a supplemental system. Cover stockpiles at the end of each day and when not in active use.
Soil Treatment	Use of airborne dust wet suppression system. Water spray mist work area prior to beginning work and a as a supplemental system.
Soil Loading, Hauling, and Placement	Use of airborne dust wet suppression system. Water spray mist work area prior to beginning work and as a supplemental system.

6.1 Dust Suppression Measures

6.1.1 Visible Dust

If visible dust is present in the excavation work area, increased wetting of the area using water trucks and spray misters will be implemented. If visible dust is observed leaving the active

excavation area, work will stop and additional dust control measures will be implemented. These additional dust control measures may include:

- Increased wetting/misting of excavation area(s), stockpiles, and/or roadways
- Adjusting the rate/speed and/or quantity of equipment in the excavation areas
- Applying temporary cover (paper mulch with tackifier) to excavation areas or soil stockpiles not being actively worked

6.1.2 Particulate and Metals Concentration Take Action Levels

If the thirty-minute (30-minute) average PM_{10} concentration from the downwind monitors, or the downwind sampler analytical data for metals, exceeds the applicable Take Action Levels set forth in Table 1 of the Plan, then RSI will immediately implement increased dust suppression activities. These increased dust suppression activities may include, but are not limited to the following:

- Increased wetting/misting of excavation area(s), stockpiles, and/or roadways
- Adjusting the rate/speed and/or quantity of equipment in the excavation area(s)
- Applying temporary cover (paper mulch with tackifier) to excavation areas or soil stockpiles not being actively worked

6.1.3 Particulate and Metals Concentration Stop Work Levels

If the one-hour (60-minute) average or thirty-minute (30-minute) average PM_{10} concentration from the downwind monitors exceeds the applicable Stop Work Level set forth in Table 1 of the Plan, RSI will immediately stop all excavation and soil loading and placement work. The dust suppression activities may include, but are not limited to the following:

- Increased wetting/misting of excavation area(s), stockpiles, and/or roadways
- Applying temporary cover (paper mulch with tackifier) to excavation areas or soil stockpiles not being actively worked
- Adjusting the rate/speed and/or quantity of equipment in the excvatation area(s)
- Stopping specific dust-generating activities until wind directions and/or wind speeds are more conducive to reduced dust levels
- Mobilize additional dust suppression equipment and initiate its use

6.2 Excavation Activities

Dust control measures will include water spraying/misting prior to beginning activities to control dust during excavation activities and as a supplemental system. Water to be utilized for dust suppression will be potable municipal water supplied by a fire hydrant located on the Exide property. Water to the hydrant is supplied through the City of Frisco Municipal Water System.

Water trucks will be filled at the water loading area at the Exide facility and sent to active excavation work areas for dust suppression. Excavation activities that are capable of generating dust are not permitted to continue when the water truck is cycling for additional water. The airborne dust wet suppression system will be operated during excavation as needed.

If there is a high wind condition, all excavation work will cease until the sustained wind speed decreases to less than 20 miles per hour.

6.3 Traffic – General

Vehicle travel on unpaved access roads will be limited to 10 miles per hour. Project personnel are required to obey posted speed limits to prevent wind turbulence and associated dust generated at higher vehicle and equipment velocities. Off road travel on unimproved roads will be limited to construction equipment, support vehicles and material delivery trucks.

Unpaved and paved roads will be wetted using a water truck prior to the start of activities and during working hours as appropriate to minimize dust formation without creating runoff or tracking issues.

6.4 Soil Stockpiles

Fugitive dust emissions from soil stockpiles will be controlled using temporary covers and water sprays. Controls for dust mitigation during soil stockpiling include a water spray/mist from a water truck prior to work beginning and as a supplemental system, operation of the airborne dust wet suppression system as a supplemental control as needed, and covering stockpiles. The height of stockpiles will be kept to approximately 8 ft, with a maximum volume of 250 cubic yards each. The lateral extent of each stock pile will be no greater than approximately 30 feet by 30 feet. Each

stockpile will be covered with 6 mil (or thicker) poly sheeting and weighted down by sandbags (or other appropriate weights) at the end of each day and when the stockpile is not in active use.

6.5 Soil Loading, On-Site Transportation and Placement

Soil will be loaded into haul trucks using an excavator or front end loader. The loading will be completed immediately adjacent to the stockpile area. Polyethylene sheeting will be placed on the ground in the loading area to allow any spillage that occurs during the truck loading operations to be easily cleaned up. Each truck will be inspected and soil adhering to the outside of the bed will be removed and the load tarped prior to exiting the load out area.

Loaded trucks will proceed directly from the load-out area to the onsite landfill. A truck tire decontamination area will be established at the egress from the on-site landfill. The tires of each truck will be washed in this area prior to return to the loading area. Truck tire decontamination fluids will be processed through the onsite waste water treatment plant.

A water truck will be stationed at the on-site landfill during the placement and spreading of the soil in the on-site land fill. The water truck will be used to wet the material as it is being dumped and spread. If it is determined through air monitoring that the water truck is ineffective for dust suppression, one or more large area misters will be mobilized to the site for use during this activity.

Material placed in the on-site landfill will be covered with paper mulch and tackifier to prevent the generation of dust on an as needed basis.

6.6 Soil Loading and Off-Site Transportation

Truck loading will be completed as described in 6.5. Trucks destined for off-site disposal facilities will be decontaminated at a central decon area. The vehicle decontamination area will be established in an area where the decontamination fluids can be collected and properly processed through the onsite waste water treatment system and the vehicles can exit the site over clean pavement.

6.7 Soil Excavation Equipment Decontamination

The excavation equipment will be decontaminated between each excavation area and upon completion of the excavation activities. The decontamination between each excavation area is expected to be minimal and should only include the tracks or tires and / or ground engaging parts of the equipment. The decontamination will consist of dry decontamination followed by washing with potable water, if needed. The decontamination will be completed immediately adjacent to the excavation on a prefabricated decontamination pad. The decontamination solids and liquids generated from each area will be placed on the stockpiled waste materials from the area that was excavated. If more liquids are generated during the decontamination process than will soak into the stockpiles, they will be placed into containers and transported to the onsite wastewater treatment plant for processing.

Final equipment decontamination will be completed at the central decon area described in section 6.6.

7.0 REPORTS

Daily Dust Concentration (PM_{10}) and Wind Speed and Direction summary reports will be prepared by FDS. These summary reports will include the average 30-minute net block average PM_{10} results for each downwind E-BAM instrument and the 30-minute block average wind speed and direction data. "Take Action" or "Stop Work" level exceedances and the dust suppression activities implemented in response will be documented in the summary reports.

The data will be validated by Exide's contractor as described in Section 6.4. Summary reports of the validated data will be provided to the TCEQ within two business days of receipt of verifiable results, excluding the day that the results are received. If data are received that are not able to be validated, an e-mail notification will be provided to the TCEQ with a brief description of the issue(s). The summary report with the corrected data will be resubmitted to Exide's contractor followed by validation. The summary report with validated data will then be submitted to TCEQ as described above. Concurrent with submittal to the TCEQ, the summary reports will be posted to the publicly accessible website established for the Exide Frisco Facility at www.exidefriscoclosure.com.

8.0 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance (QA) refers to the planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy a given requirement for quality. QA is applied to location and equipment selection, equipment acquisition and installation, routine site operation, and data processing and reporting.

Quality control (QC) refers to the operational techniques and activities that are used to fulfill requirements for quality. QC procedures applied at each step provide checks for acceptable conditions with corrective procedures specified when necessary.

The purpose of QC procedures is to assess and document data quality and to define remedial corrective actions when operating conditions exceed pre-established limits. Routine QC procedures are designed to focus on areas most likely to have problems, based on experience and guideline documents. The following subsections describe the QC, calibration, and auditing procedures to be used during this project.

8.1 Particulate Monitors

8.1.1 Quality Control

The E-BAM particulate monitor beta detectors are calibrated at the factory. The beta detector calibrations remain fixed for the life of the unit, and no user adjustments are required. Each unit has test membranes that are placed in the beta particle pathway to verify performance of the detector. The test membranes are thin sheets of material that absorb a fraction of beta particles equivalent to a known mass of particulate matter. Each instrument has an individually matched membrane, and the factory-provided equivalent mass reading is stored in the instrument. The reference membrane tests are manually performed prior to the start of the project and at least every three weeks (the manufacturer recommends a frequency of one or two times per year for the E-BAM). The units are also equipped with zero-check inserts that are used in the same manner as the reference membranes. The zero check insert test will be performed prior to the start of the project and prior to the start of work each week.

QC flow checks will be performed by RSI personnel every three weeks to ensure that the correct sample flow rate is being maintained to provide proper particle size separation. The flow rate calibration is performed using a traceable reference standard flow audit device (BGI deltaCal® or equivalent). The barometric pressure and ambient temperature must be audited and calibrated, if necessary, prior to the flow check. The ambient temperature and barometric pressure indicated on the traceable reference standard flow audit device is compared to the ambient temperature and barometric pressure indicated on the E-BAM. If necessary, the ambient temperature and barometric pressure indicated on the traceable standard flow audit device is entered into the E-BAM to correct the E-BAM internal ambient temperature and/or barometric pressure sensor reading. The flow rate calibration can then be performed. The E-BAM internal flow rate is audited based upon the flow rate indicated by the traceable reference standard flow audit device. If necessary the E-BAM flow rate indicated on the traceable standard flow audit device is entered into the E-BAM to correct the E-BAM internal flow sensor reading. A pump test will be performed every three weeks as well.

The E-BAM particle size selective inlets are designed to function at a flow rate of 16.7 L/min to maintain proper particle separation. Cleaning of the size selective inlets on the particulate monitors will be conducted prior to the start of each work week. The larger particles that are removed from the air flow are captured inside the PM_{10} inlet heads. To maintain proper operation of the inlets, the particle deposits must be cleaned periodically. A leak check will be performed weekly and when the tape is removed or a new tape is installed. The nozzle and vane beneath the filter tape will be cleaned each time the tape is changed but at a minimum of once per month.

8.2 Air Samplers

8.2.1 Quality Control

Field and trip blank quality control samples will be collected. Field blank samples assess the possible contamination introduced by field sampling procedures, sampling media, sampling equipment, or shipment of the samples. Trip blanks verify the cleanliness of the sampling media.

The field blank will be shipped to the field, prepared, and handled as the other samples, and returned to the laboratory, without drawing air through the air sampler, for analysis. One field blank will be collected each week for metals analysis. The trip blank will be shipped to the field,

left sealed in its packaging, and then returned to the laboratory for analysis. One trip blank will be analyzed per month.

8.2.2 Quality Assurance

Precision and accuracy checks are both elements of QA. Precision checks are a measure of agreement among individual measurements of the same parameter, usually under prescribed similar conditions. Accuracy is the degree of agreement between an accepted reference measurement and the field measurement. Accuracy may be expressed as a total difference, or as a percentage of the reference value, or as a ratio. Precision checks are performed as collocated measurements.

Accuracy of ambient air sampling equipment is measured in terms of the accuracy of the flow rate measurement. Accurate determination of the air volume drawn through the air sampler is essential to the concentration calculation. Flow rates of the air samplers will be determined pre- and post-sampling using calibrated equipment appropriate to the sampling device and will be provided to the laboratory along with the sample.

Preventive maintenance will be part of the air samplers' QA program. Preventive maintenance is a combination of preventive and remedial actions taken to prevent or correct failure of the monitoring systems. Preventive maintenance for the air samplers includes inspection and cleaning of the inlets.

8.3 Laboratory Validation

Data validation is used to interpret the quality of the analytical data received from the laboratory. The quality of the data is determined through evaluation of both the field and laboratory quality control samples. Data validation procedures determine whether individual project data are useable, useable with qualification, or unusable. Data will be reviewed in accordance with guidelines presented in USEPA's *National Functional Guidelines for Inorganic Superfund Data Review* (2010) and/or *National Functional Guidelines for Organic Superfund Data Review* (2008).

The Laboratory will submit the analytical data and supporting QA/QC data to Exide's consultant for validation. The validation review will consist of a Level II review which includes the following: blank samples (i.e., trip, method, equipment, field, etc.) are reviewed for detections which may indicate whether field or laboratory handling may have cross-contaminated samples causing false positive or high-biased data; spike recovery samples (i.e., laboratory control sample, surrogate, or matrix spike) are reviewed to evaluate accuracy in the laboratory's ability to recover known concentrations that were intentionally spiked into the quality control samples; and, duplicate samples (laboratory-prepared) are evaluated to determine precision, which is the level of agreement among individual measurements. In addition to the above quality control samples, verification of appropriate analytical methods, reporting limits, sample preservation, and holding times are also reviewed to determine data usability.

Any potential bias (high or low) or cross-contamination observed as a result of the data review is usually addressed by addition of data qualifiers. These typically include one of the following: a non-detect (U) flag for blank detections indicating the potential for cross-contamination; an estimated (J) flag for results that could be biased high or low due to accuracy or precision issues; rejection of data (R) due to results grossly outside their respective control limits or questionable data.

8.4 Dust Concentration, Wind Speed and Direction Report Validation

The Daily Dust Concentration and Wind Speed and Direction summary reports will be prepared by FDS and provided to Exide's consultant for validation. The review will include review of error reports, previous instrument flow and leak check information as well as review of the data received to insure the data being reported is from the instruments being used at the Site.

8.5 Sample Information Management

The sample information management system for the monitoring will be based on a uniform sample identification system. Each sample will receive a unique ID that is based on the unique combination of project, sampling date, sampling location and the Serial Number of the E-BAM Monitor that the sample is associated with.

9.0 POINTS OF CONTACT

Concerns regarding activities conducted at the Exide Technologies Frisco Recycling Center should be addressed to the following points of contact:

Exide:
Matt Love
3000 Montrose Avenue
Reading, PA 19605
Ph: 610-921-4054
Matt.love@Exide.com

Texas Commission on Environmental Quality:
Margaret Ligarde
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Austin, Texas 78711
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Margaret.ligarde@tceq.texas.gov

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mborchardt@friscotexas.gov

APPENDICES

APPENDIX A

Descriptive Literature on E-BAM Particulate Monitors

E-BAM

E-BAM is a complete measurement system it comes with the following standard components:

- 8 Channel Datalogger
- Internal DC Vacuum Pump Standard
- Real-Time Concentration
- PM10 Inlet
- Aluminum Tripod
- Ambient Temperature Sensor
- Volumetric Flow Control
- Weatherproof Enclosure
- Filter Temperature Sensor
- Filter RH Sensor
- Filter Pressure Sensor
- Calibration Membrane

Specifications

Range	0 - 65 mg per cubic meter
Accuracy	2.5 µg or 10% in 24 hour period
Measurement Cycle	Hourly measurements with 1, 5, 10, 15, or 30 min real-time averages
Beta Source	C14, less than 75 microcurie, Half life of 5730 years
Detector:	Scintillation probe
Analog Output	0-1V, 0-2.5v, 0-5V, selectable hourly or real-time output
Filter Tape	Continuous glass fiber filter
Inlet	Compatible with EPA PM10 and PM2.5 inlets
Flow Rate:	16.7 liters per minute, adjustable
Flow accuracy	+/- 2% of reading, volumetric flow controlled
Sample Pump	Dual diaphragm type, DC powered, 4000 hr rating
Alarm Signals	Filter, flow, power and operation failure
Input Power	12 Volts DC @ 48 Watts max
Alarm Contact Closure	2 Amp @ 240 VAC max
Operating Temperature	-30 Deg C to 50 Deg C
Enclosure	41 cm x 36 cm x 20 cm, 13kg

Options and Accessories

- BX-302 Zero Calibration Kit
- BX-305 Leak check valve
- BX-307 Flow Calibrator
- BX-308 PM2.5 Sharp-Cut Cyclone
- BX-803 TSP Inlet
- EX-034 Wind speed and direction sensor
- EX-121 AC Power supply, 100-240 VAC, 12 VDC output
- EX-593 Ambient RH Sensor
- EX-996 Phone modem kit
- EX-911 Cell modem kit
- 460130 Filter tape, roll
- 9425 Wall mount bracket
- Airsis Satellite modem kit
- External AC Vacuum Pump
- MMP MicroMet Plus Software
- Solar Panel Array

Met One Instruments, Inc.
Corporate Sales & Service: 1600 Washington Blvd., Grants Pass, Oregon 97526 • Tel (541) 471-7111 • Fax (541) 471-7116
Regional Sales & Service: 3206 Main Street, Suite 106, Rowlett, Texas 75088 • Tel (972) 412-4747 • Fax (972) 412-4716
http://www.metone.com • metone@metone.com

Rev. 08/09

The Met One E-BAM is a portable, real-time beta gauge which is comparable to U.S. EPA methods for $PM_{2.5}$ and PM_{10} particulate measurements.

The Met One E-BAM has been built to satisfy users, regulators and those from the health community by providing truly accurate, precise, real time measurement of fine particulate matter automatically. In addition, it is rugged, portable, battery operated, and deployable in 15 minutes.

The E-BAM offers the following advanced features:

1. Accuracy and precision consistent with U.S. EPA requirements for Class III $PM_{2.5}$ and PM_{10} measurement.
2. Real-time, accurate results without correction factors, regardless of season or geographic location.
3. True ambient sampling provides accurate measurement of semi-volatile nitrates and organic compounds.
4. Lightweight, rugged construction is easily mounted on a tripod in minutes.
5. All-weather construction allows for true ambient sampling.
6. Operates on AC or DC power. Battery and Solar options available upon request.

Met One Instruments, Inc.

Met One Instruments, Inc.

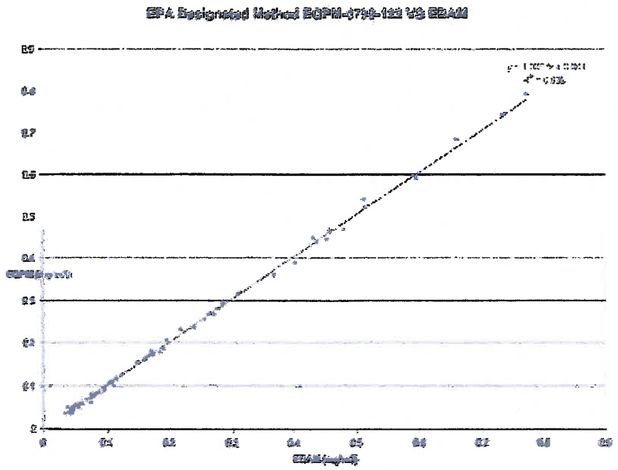
Continuous Monitoring

The E-BAM automates particulate measurement by continously sampling and reporting concentration data. Data records are updated every minute. E-BAM eliminates the old process of filter collection and manual filter weighing, and eliminates the need for more expensive, high maintenance instruments. Today, with the adaptation of Beta Attenuation to ambient monitoring this process became simple, streamlined, and inexpensive.

About Accuracy

Real-time accurate, reliable, and repeatable measurement of ambient fine particulate matter has been the elusive goal of environmental regulators and health professionals for many years. Met One Instruments has developed advanced particulate monitoring instrumentation which is reliable, and is easy to operate. It will also automatically report results in near real time, eliminating the need for high levels of human intervention.

Because sampling occurs under true ambient conditions semi-volatile organic compounds and nitrates are easily detected thereby avoiding under measurement.



Continuous Sampling

E-BAM is a lightweight portable instrument that operates directly in hostile environments without an exterior enclosure. E-BAM is a very robust portable sampler system that is easily installed in less than 15 minutes. No other sampler matches the portability and flexibility of the E-BAM.

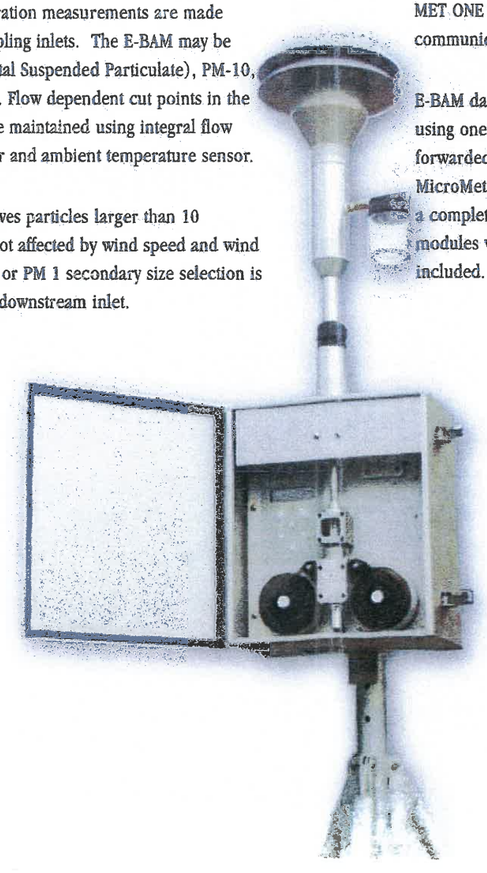
Set up

Quick setup of the E-BAM is assured with a series of prompts instructing the installer on the sequence to follow. Then the E-BAM performs a series of self test diagnostics and alerts the installer of any corrective action. Upon completion, the E-BAM automatically places itself in normal operate mode.

Particulate size selection

Size selective concentration measurements are made using a variety of sampling inlets. The E-BAM may be supplied with TSP (Total Suspended Particulate), PM-10, PM 2.5 or PM 1 inlets. Flow dependent cut points in the size selective inlets are maintained using integral flow meter, pressure sensor and ambient temperature sensor.

The PM-10 inlet removes particles larger than 10 microns, the inlet is not affected by wind speed and wind direction. For PM 2.5 or PM 1 secondary size selection is made using a second downstream inlet.



Construction etc.

The standard configuration of the E-BAM is a self-contained environmentally sealed aluminum enclosure placed on a rugged tripod. This system can be permanently placed on rooftops, near roads, at industrial sites, or rapidly deployed to monitor emergency situations.

'E- 'represents Environment Proof instrument, E-BAM has been specifically designed to work in hostile environments without additional protection.

Direct Field Reporting

Collecting real time or historical particulate data from a field site has never been easier. Advanced communication options include cellular phone, Line of Sight Radio, and for very remote sites, satellite communications are now available. E-BAM also supports the full line of standard MET ONE options, such as phone modem, and direct communications to a portable computer.

E-BAM data is recorded internally and may be retrieved using one of the communication options, or data may be forwarded to third party data acquisition system. MicroMet Plus Software supports the E-BAM and provides a complete communication, data base and reporting modules with charting. Comet data retrieved software is included.

Digital, Analog and Alarm Outputs

The E-BAM provides both continuous digital and analog outputs. Analog output is selectable to several full-scale voltages. Digital output is supplied as RS-232.

Reporting modes

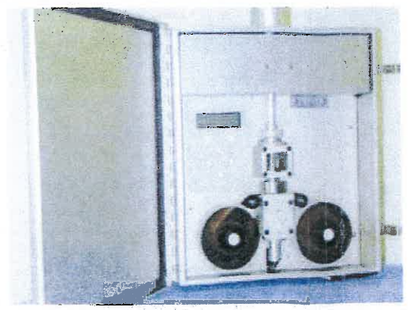
The internal data logger can store up over 182 days of concentration data at one hour sample times, and collect data from eight other measurements at the same time! Both digital and analog outputs are included to enable users to connect to other data recording systems.

Easy to Operate

E-BAM has been programmed to operate at all times, except during calibration verification. Current data, historical data, and status information are available at all times without interrupting normal E-BAM operation.

Data Validation

The operator may select various criteria for data validation, including deviation from rolling average, high value excursions, power failure and others. If an error occurs it is entered into the error log with date, time and type of error.



APPENDIX B

NIOSH Method 7303

METALS ANALYSES DETAILS - NIOSH METHOD 7303

ELEMENTS by ICP (Hot Block/HCl/HNO_3 Digestion)

7303

MW: Table 1 CAS: Table 2 RTECS: Table 2

METHOD: 7303, Issue 1 **EVALUATION: PARTIAL** **Issue 1: 15 March 2003**

OSHA: Table 2
NIOSH: Table 2
ACGIH: Table 2

PROPERTIES: Table 1

ELEMENTS:

aluminum	cadmium	indium	nickel	strontium	zinc
antimony*	calcium	iron	palladium	tellurium	
arsenic	chromium	lead*	phosphorus	thallium	
barium	cobalt	magnesium	platinum	tin*	
beryllium	copper	manganese	potassium	titanium	
bismuth*	gallium	molybdenum	selenium	vanadium	
boron	gold	neodymium	sodium	yttrium	

* With certain restrictions (see Table 3)

SAMPLING

SAMPLER: FILTER (0.8-µm, cellulose ester membrane)

FLOW RATE: 1 to 4 L/min

VOL-MIN: Table 1
-MAX: Table 1

SHIPMENT: Routine

SAMPLE STABILITY: Stable

BLANKS: 2 to 10 field blanks per set

ACCURACY

RANGE STUDIED: 5,000 to 50,000 µg/sample

BIAS: Not determined

OVERALL PRECISION: Not determined

ACCURACY: Not determined

MEASUREMENT

TECHNIQUE: INDUCTIVELY COUPLED ARGON PLASMA, ATOMIC EMISSION SPECTROSCOPY

ANALYTE: See element list above

REAGENTS: Conc. HCl, 1.25 mL; and conc. HNO_3, 1.25 mL

FINAL SOLUTION: 5% HCl and 5% HNO_3, 25 mL

WAVELENGTH: Element and instrument specific

BACKGROUND CORRECTION: Spectral wavelength shift

CALIBRATION: Elements in 5% HCl, 5% HNO_3

RANGE: LOQ to 50,000 µg/sample [1]

ESTIMATED LOD: Varies with element; Table 1

PRECISION (Š): Not evaluated

APPLICABILITY: The working range of this method is up to 100 mg/m³ for each element in a 500-L sample (the minimum range depends on the LOD for each sample; see Table 1). The analysis is not compound specific. Certain elemental compounds are known to be acceptable or unacceptable by this method (see Table 3). For unverified compounds, a test run should be conducted using a known amount of the compound in question to determine acceptability.

INTERFERENCES: Interferences are spectral in nature and are accounted for by choosing appropriate wavelengths, applying interelement correction factors, and background correction.

OTHER METHODS: Alternative, more sensitive methods exist for some elements by graphite furnace atomic absorption spectroscopy. This method is similar to NIOSH Method 7301, differing only in the use of the hot block for digestion of the sampler.

REAGENTS:

1. Hydrochloric acid,* conc., ultra pure.
2. Nitric acid,* conc., ultra pure.
3. Calibration stock solutions, 50-1000 µg/mL. Commercially available single element solutions or multielement solutions prepared as instructed by the instrument manufacturer.
4. Argon, prepurified.
5. Distilled, deionized, Type II water.
6. Diluting solution: 5% HCl : 5% HNO_3. To about 600 mL of deionized water in a 1-L volumetric flask, slowly add 50 mL conc. HCl and 50 mL conc. HNO3. Dilute to the mark with deionized water.

* See SPECIAL PRECAUTIONS

EQUIPMENT:

1. Sampler: cellulose ester membrane filter, 0.8-µm pore size, 37-mm diameter; in cassette filter holder.
2. Personal sampling pump, 1 to 4 L/min, with flexible connecting tubing.
3. Inductively coupled argon plasma-atomic emission spectrometer, equipped as specified by the manufacturer for analysis of elements of interest.
4. Hot block apparatus at 95 °C.
5. Digestion vessels and caps, 50-mL.
6. Watchglasses.
7. Pipettes, electronic and mechanical.
8. Regulator, two-stage, for argon.
9. Forceps.

SPECIAL PRECAUTIONS: Concentrated acids are powerful oxidizers, toxic, and corrosive liquids. Wear protective clothing and work in a fume hood.

SAMPLING:

1. Calibrate each personal sampling pump with a representative sampler in line.
2. Sample at an accurately known flow rate between 1 and 4 L/min for a total sample size of 200 to 2000 L for TWA measurements. Do not exceed a filter loading of approximately 2 mg total dust.

SAMPLE PREPARATION:

3. Open the cassette filter holder and with forceps remove the sample filter. Fold the filter into quarters taking care not to lose any sample, and transfer to a clean, 50-mL hot block digestion tube.
4. Add 1.25 mL HCl. Cover with a plastic watchglass. Place in the hot block and heat at an internal temperature of 95 °C for 15 minutes.
   NOTE: The internal temperature may vary from the digital readout. Calibrate the hot block prior to digestion.
5. Remove the sample from the hot block and cool for 5 minutes. Remove watchglass and add 1.25 mL HNO_3. Replace watchglass and return to hot block at 95 °C for 15 minutes.
6. Remove the sample from the hot block and cool for at least 5 minutes. Rinse watchglass into the sample container and discard watchglass.
7. Dilute to 25-mL final volume with distilled, deionized Type II water.

CALIBRATION AND QUALITY CONTROL:

8. Calibrate the spectrometer according to the manufacturer's recommendations. Use standards consisting of the same 5% HCl : 5% HNO_3 matrix as the samples.
9. Analyze a standard every 10 samples.
10. Analyze a media blank every 20 samples, and a reagent blank every 10 samples.
11. Analyze a set of two laboratory control samples every 40 samples of a given matrix for a given analyte.
12. Check recoveries with at least two spiked media blanks per ten samples.
    NOTE: In the determination of lead, there may be a measurement interference (for example, samples with high aluminum levels). More recent instruments have a correction for this.

MEASUREMENT:

13. Set spectrometer to conditions specified by manufacturer.
14. Analyze standards, samples and quality control checks.
    NOTE: If the elemental value for a sample is above the linear range of the element(s) in question, dilute the sample solution with 5% HCl : 5% HNO_3 diluting solution, reanalyze and apply the appropriate dilution factor in the calculations.

CALCULATIONS:

15. Obtain the solution concentrations for the sample, C_s (µg/mL), and the average media blank, C_b (µg/mL), from the instrument.
16. Using the solution volumes of sample, V_s (mL), and media blank, V_b (mL), calculate the concentration, C (mg/m^3), of each element in the air volume sampled, V (L):

$$C = \frac{C_s V_s - C_b V_b}{V}, mg/m^3$$

NOTE: µg/L ≡ mg/m^3

EVALUATION OF METHOD:

The method was evaluated for all elements and compounds listed in Table 1 and Table 2 between 1999 and 2001 using known amounts of bulk material [4]. Evaluation is ongoing for additional elements and compounds. The limits of detection and quantitation were also determined for each element. Two ICP instruments were used in the evaluation, a Thermal Jarrell Ash Model 61E [5] and a TJA IRIS [6], operated according to the manufacturer's instructions.

REFERENCES:

[1] WOHL [2001]. Metals validation using hot block digestion, Unpublished data. Wisconsin Occupational Health Laboratory, Madison, WI.
[2] NIOSH [1994]. Method 7300: Elements by ICP,.NIOSH Manual of Analytical Methods, Fourth Edition, Issue 2, Aug. 15, 1994.
[3] WOHL [2001]. Metals Manual 2001, WOHL Internal Document, Updated Apr. 1, 2001. Wisconsin Occupational Health Laboratory, Madison, WI.
[4] WOHL [2001]. WOHL General Operations Procedures Manual, WOHL Internal Document, Updated 2001. Wisconsin Occupational Health Laboratory, Madison, WI.
[5] Thermal Jarrell Ash [1991]. ICAP 61E Plasma Spectrometer Operator's Manual, Thermal Jarrell Ash Corp., Part No. 128832-01, Feb., 1991.
[6] Thermal Jarrell Ash [1997]. IRIS Plasma Spectrometer User's Guide, Thermal Jarrell Ash Corp., Part No. 135811-0, Feb. 4, 1997.

METHOD WRITTEN BY:

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TABLE 1: ANALYTE INFORMATION FOR VALID ELEMENTS AND COMPOUNDS

Analyte	Properties		LOD (µg/mL)	LOQ (µg/mL)	Estimated LOQ (µg/sample)*	Minimum** air vol. (L)	Maximum*** air vol. (L)
	MW	MP (°C)					
Al	26.98	660	0.111	0.37	9.25	2	10,000
As	74.92	817	0.009	0.03	0.075	8	5,000,000
Au	196.97	10.63	0.015	0.05	1.25	1	3,300
B	10.81	2177	0.0094	0.0283	0.71	1	3,300
Ba	137.34	3.51	0.0018	0.006	0.15	1	100,000
Be	9.01	2178	0.00075	0.0025	0.062	35	25,000,00
Bi	208.98	271	0.025	0.085	2.12	1	10,000
Ca	40.08	842	0.099	0.33	8.25	2	10,000
CaO	56.08	2927	0.139	0.462	11.6	3	10,000
Cd	112.4	321	0.0037	0.012	0.30	3	500,000
Co	58.93	1495	0.003	0.011	0.27	3	500,000
Cr	52.00	1890	0.009	0.03	0.75	8	500,000
Cu	63.54	1083	0.020	0.060	1.50	15	500,000
Fe	55.85	1535	0.070	0.20	5.00	1	5,000
Fe_2O_3 (as Fe)	159.69	1462	0.070	0.20	5.00	1	5,000
Ga	69.72	29.75	0.03	0.09	2.25	1	3,300
In	114.82	156.3	0.015	0.05	1.25	15	500,000
Mg	24.31	651	0.047	0.14	3.50	1	10,000
MgO	40.32	2825	0.078	0.23	5.75	5	33,000
Mn	54.94	1244	0.0012	0.004	0.10	0.05	10,000
Mo	95.94	651	0.0072	0.024	0.60	0.5	10,000
Nd	92.906	2477	0.01	0.03	0.75	0.1	3,300
Ni	58.71	1453	0.012	0.039	0.98	1	50,000
P	30.97	44	0.3	1.0	25	250	500,000
Pb	207.19	328	0.023	0.07	1.75	35	100,000
Pd	106.4	1550	0.009	0.03	0.75	0.1	3,300
Pt	195.09	1769	0.0045	0.015	0.38	200	25,000,000
Sb	121.75	630.5	0.018	0.06	1.50	3	100,000
Se	78.96	217	0.021	0.064	1.60	8	250,000
Sn	118.69	232	0.015	0.05	1.25	1	25,000
Sr	87.62	769	0.002	0.006	0.15	300	100,000,000
Te	127.60	450	0.15	0.5	12.5	125	500,000
Ti	47.90	1675	0.005	0.016	0.40	0.1	10,000
Tl	204.37	304	0.044	0.133	3.32	35	500,000
V	50.94	1890	0.003	0.01	0.25	2.5	500,000
Y	88.91	1495	0.001	0.003	0.075	0.1	50,000
Zn	65.37	419	0.022	0.066	1.65	0.5	10,000
ZnO	81.37	1970	0.027	0.082	2.05	0.5	10,000

* Value based on a 25-mL sample volume.

** The minimum sampling volume needed to obtain the OSHA PEL at the LOQ for the element/compound at a sample digestion volume of 25 mL.

*** The maximum sampling volume for a given sample, calculated by taking 50,000 µg as the limit for the element/compound per sample.

NOTE: The LOD and LOQ values are dependent on the particular analytical instrument used. Also, LOD and LOQ values may vary for a particular element due to certain interelement interferences.

TABLE 2. EXPOSURE LIMITS, CAS #, RTECS

Element (Symbol)	CAS #	RTECS	Exposure Limits, mg/m³ (Ca = carcinogen) OSHA	NIOSH	ACGIH
Silver (Ag)	7440-22-4	VW3500000	0.01 (dust, fume, metal)	0.01 (metal, soluble)	0.1 (metal) 0.01 (soluble)
Aluminum (Al)	7429-90-5	BD0330000	15 (total dust) 5 (respirable)	10 (total dust) 5 (respirable fume) 2 (salts, alkyls)	10 (dust) 5 (powders, fume) 2 (salts, alkyls)
Arsenic (As)	7440-38-2	CG0525000	varies	C 0.002, Ca	0.01, Ca
Barium (Ba)	7440-39-3	CQ8370000	0.5	0.5	0.5
Beryllium (Be)	7440-41-7	DS1750000	0.002, C 0.005	0.0005, Ca	0.002, Ca
Calcium (Ca)	7440-70-2	–	varies	varies	varies
Cadmium (Cd)	7440-43-9	EU9800000	0.005	lowest feasible, Ca	0.01 (total), Ca 0.002 (respir.), Ca
Cobalt (Co)	7440-48-4	GF8750000	0.1	0.05 (dust, fume)	0.02 (dust, fume)
Chromium (Cr)	7440-47-3	GB4200000	0.5	0.5	0.5
Copper (Cu)	7440-50-8	GL5325000	1 (dust, mists) 0.1 (fume)	1 (dust) 0.1 (fume)	1 (dust, mists) 0.2 (fume)
Iron (Fe)	7439-89-6	NO4565500	10 (dust, fume)	5 (dust, fume)	5 (fume)
Potassium (K)	7440-09-7	TS6460000	–	–	–
Lanthanum	7439-91-0	–	–	–	–
Lithium (Li)	7439-93-2	–	–	–	–
Magnesium (Mg)	7439-95-4	OM2100000	15 (dust) as oxide 5 (respirable)	10 (fume) as oxide	10 (fume) as oxide
Manganese (Mn)	7439-96-5	OO9275000	C 5	1; STEL 3	5 (dust) 1; STEL 3 (fume)
Molybdenum (Mo)	7439-98-7	QA4680000	5 (soluble) 15 (total insoluble)	5 (soluble) 10 (insoluble)	5 (soluble) 10 (insoluble)
Nickel (Ni)	7440-02-0	QR5950000	1	0.015, Ca	0.1 (soluble) 1 (insoluble, metal)
Phosphorus (P)	7723-14-0	TH3500000	0.1	0.1	0.1
Lead (Pb)	7439-92-1	OF7525000	0.05	0.05	0.05
Antimony (Sb)	7440-36-0	CC4025000	0.5	0.5	0.5
Selenium (Se)	7782-49-2	VS7700000	0.2	0.2	0.2
Tin (Sn)	7440-31-5	XP7320000	2	2	2
Strontium (Sr)	7440-24-6	–	–	–	–
Tellurium (Te)	13494-80-9	WY2625000	0.1	0.1	0.1
Titanium (Ti)	7440-32-6	XR1700000	–	–	–
Thallium (Tl)	7440-28-0	XG3425000	0.1 (skin) (soluble)	0.1 (skin) (soluble)	0.1 (skin)
Vanadium (V)	7440-62-2	YW240000	–	C 0.05	–
Tungsten	7440-33-7	–	5	5 10 (STEL)	5 10 (STEL)
Yttrium (Y)	7440-65-5	ZG2980000	1	N/A	1
Zinc (Zn)	7440-66-6	ZG8600000	–	–	–
Zirconium (Zr)	7440-67-7	ZH7070000	5	5, STEL 10	5, STEL 10

TABLE 3: VALIDATION SUMMARY

Analyte	Status[1]	Analyte	Status	Analyte	Status
Ag	Not Valid	CuO	Valid	S	Not Valid
Al	Valid	Fe	Valid	Sb	Partially Valid[4]
Al_2O_3	Not Valid	Fe_2O_3	Valid	Sb_2O_3	Partially Valid[5]
As	Valid	Ga	Valid	Se	Valid
Au	Valid	In	Valid	Si	Not Valid
B	Valid	KCl	Pending	Sn	Partially Valid[6]
Ba	Pending	Mg	Valid	SnO	Pending
BaO	Pending	MgO	Valid	SnO_2	Pending
BaO_2	Pending	Mn	Valid	Sr	Valid
$BaCl_2$	Valid	MnO	Valid	$SrCrO_4$	Valid (by Cr)
$BaSO_4$	Pending	Mo	Valid	Te	Valid
Be	Valid	NaCl	Pending	Ti	Valid
Bi	Partially Valid[2]	Nd	Valid	Tl	Valid
Ca	Valid	Ni	Valid	V	Valid
$CaCO_3$	Valid	P	Valid	V_2O_5	Valid
CaO	Valid	Pb	Partially Valid[3]	Y	Valid
Cd	Valid	$PbCrO_4$	Valid (by Cr)	Zn	Valid
Co	Valid	PbO	Valid	ZnO	Valid
Cr	Valid	Pd	Valid	Zr	Not Valid
Cu	Valid	Pt	Valid	ZrO	Not Valid

[1] Status definitions

Valid: The method is suitable for samples up to at least 0.0500 g bulk material with recoveries of between 90 and 110 percent. This weight exceeds most expected levels encountered in work environments.

Partially Valid: The method is suitable with bulk-material recoveries of between 90 and 110 percent under certain conditions (as footnoted above).

Not Valid: The method procedure is not suitable for samples at any weight with recoveries of between 90 and 110 percent. An alternative method should be used.

[2] Valid up to 10,000 µg/sample and within 7 days of sample digestion.

[3] Valid up to 50,000 µg/sample and at least 24 hours after sample digestion; Valid up to 15,000 µg/sample within 24 hours of sample digestion.

[4] Valid up to 25,000 µg/sample and within 7 days of sample digestion.

[5] Valid up to 25,000 µg/sample and within 7 days of sample digestion.

[6] Valid up to 30,000 µg/sample and within 7 days of sample digestion.

NOTE: The upper limits of the method can be extended by serial dilution of the samples at the time of analyses.

APPENDIX C

Descriptive Literature on Dust Boss Misting Equipment

DUSTBOSS®
www.dustboss.com

DB-60 SPECS >

GENERAL SPECIFICATIONS

> 30,000 CFM (849.50 CMM) generated by 25 HP fan.
> 21,000 square feet (1,950 square meters) coverage. Up to 84,000 square feet (7,804 square meters) coverage available with optional 180° oscillation.
> Oscillator gives 0–40° of movement on standard unit. Unit can also be equipped with optional 180° oscillation.
> Adjustable angle of throw 0–50° of height adjustment.

ELECTRICAL SPECIFICATIONS

> U.S.: 3 Phase / 25 HP fan / 480 Volt / 60 Hertz .
Full load current is 46 amps. 60 Kw gen set is recommended.
Motor is designed with a 1.15 service factor capable of operating at +/- 10% of design voltage.
> Other motor options available, including all international electrical motors:
- 3 Phase / 25 HP fan /380 Volt / 50 Hz (Europe, Middle East, N. Japan, Latin America)
- 3 Phase / 25 HP fan /400 Volt / 50 Hz (Europe, Japan, New Zealand, Australia)
- 3 Phase / 25 HP fan /415 Volt / 50 Hz (Europe, New Zealand, Australia)
- 3 Phase / 25 HP fan /575 Volt / 60 Hz (Canada)
- 3 Phase / 25 HP fan /380 Volt / 60 Hz Korea)
- 3 Phase / 25 HP fan /440 Volt / 60 Hz (Mexico)

> 380, 400, 415 volt / 50 Hz motors are designed with a 1.00 service factor capable of operating at +/- 10% of design voltage.
> 10 HP (7.5 Kw) high-pressure booster pump with no lift.
> 1/8 HP (0.10 Kw) oscillator.
> 150 foot (45.72 meters) 6/4 electrical cord. Other options available.
> No male plug. "bare wired" is standard. Any plug is extra cost.
> Cabinet with control panel.

WATER SPECIFICATIONS

> 10PSI (0.69 BAR) constant pressure needs to be delivered to booster pump. Maximum inlet water pressure should not exceed 100 PSI (6.89 BAR) when operating the booster pump.
> Maximum PSI delivered by booster pump is 200 PSI (13.79 BAR).
> Filter is included and should be used at all times. Contact us for recommendations when using nonpotable water.
(Filter system in-line 30 mesh 595 micron).
> 1-1/2" (38.10 mm) cam-and-groove quick disconnect female coupling for fire hose provided on machine.
> 30 brass nozzles (also available in stainless and nylon).
> Droplet size of 50–200 microns.
> Throw 200 feet (60 meters).

ENGLISH UNITS	WITHOUT BOOSTER PUMP				WITH BOOSTER PUMP		
Water Pressure, psi	40	60	80	100	160	180	200
Water Flow, gpm	12	14.6	16.9	18.9	23.9	25.4	26.7
METRIC UNITS							
Water Pressure, bar	2.8	4.14	5.5	6.89	11	12.4	13.8
Water Flow, lpm	45.3	55.4	64.0	71.6	90.5	96.0	101.2
1-1/2" FIRE HOSE WATER SUPPLY							

NOISE LEVELS

WITH BOOSTER PUMP	CONTROL PANEL SIDE	BACK SIDE OF FAN	OPPOSITE SIDE	DISCHARGE
0 feet	92	103	92	100
12 feet	86	89	84	88
WITHOUT BOOSTER PUMP	CONTROL PANEL SIDE	BACK SIDE OF FAN	OPPOSITE SIDE	DISCHARGE
0 feet	86	101	88	96
12 feet	80	87	80	84

DIMENSIONS

ON STANDARD WHEELED CARRIAGE

> 6.75 feet (81 inches; or 2.06 meters) wide.
> 9.75 feet (117 inches; or 2.97 meters) long.
> 7.17 feet (86 inches; or 2.19 meters) tall.
> 1800 lbs. (816.50 kilograms).

MAINTENANCE

> If using potable water, nozzles need to be inspected once a year.
> Fan motor and high pressure pump should be greased every 10,000 hours.
> Oscillator bearing should be greased on a regular maintenance schedule, or as needed.

CHEMICAL ADDITIVES

> Can be used with surfactant to improve binding of dust particles or with tackifying agents to seal the ground to prevent dust from becoming airborne
> Odor control chemicals can be used to help eliminate odor.

OPTIONS

> Unit is available with optional 180° oscillation. Standard oscillation provides 0–40° of movement.
> Available on frame with skid mount. Unit comes standard on wheeled carriage.
> Dosing pump can be added to unit for chemical applications.

WARRANTY

> Unit is covered by a 3-year/3,000-hour warranty.

> CALL: 1 (800) 707-2204 (U.S.)
+1 (309) 693-8600 (Int'l)
> 24 HR Technical Support: (309) 645-3691
www.dustboss.com

PLYMOUTH TECHNOLOGY

XP 355

DESCRIPTION AND USE

XP 355 is a liquid dust suppressant that can be added to dry material at any point in the operation.

XP 355 is effective at low dosage levels providing superior performance and economical treatment.

TYPICAL PROPERTIES

These properties are typical. Refer to the MSDS for the most current data.

Appearance:	Red Liquid
pH:	NA
Solubility in water:	Low

FEED METHOD & DOSAGE

XP 355 dosage varies depending on plant conditions. Your Plymouth Technology representative will conduct a series of on site testing to determine optimal feed rates for your application.

Typical dosage rates are 20-40 ounces per ton.

The most effective method of application is to spray the liquid through multiple nozzles on the dry material as it is being conveyed.

MATERIALS OF COMPATIBILITY

Compatible: Tanks – HPDE, PP, XLPE
Fittings – PVC, CPVC, EDPM, Viton

Non-Compatible: Fittings –Copper, Aluminum

PACKAGING

Packaging is standard in bulk, one way intermediate bulk containers (totes) and 55-gallon drums.

STORAGE

Recommended storage periods:
Material as supplied: 12 months

Protect from freezing.

HANDLING

For complete safety information, please refer to the Material Safety Data Sheet.

CHEMICAL EMERGENCY NUMBER:

1-800-535-5050

Plymouth Technology, Inc.
2925 Waterview • Rochester Hills • MI • 48309 USA
(248) 537-0081 • Fax (248) 537-0088
www.PlymouthTechnology.com

APPENDIX D

Descriptive Literature on Dust Suppression Material

Conwed Fibers®

Family of Hydraulic Mulch Products

Setting the Standards for Erosion Control Since 1965

Conwed Fibers® Is Your Insurance Policy Against the Storm of Phase II

Nothing is changing the face of erosion control more dramatically than the Clean Water Act. Noncompliance with the National Pollution Discharge Elimination System (NPDES) Phase II storm water regulations is subject to administrative orders, civil actions and/or criminal prosecutions on federal, state, county and/or local level. Conwed Fibers® can help ensure you'll be in compliance by helping you calculate the Revised Universal Soil Loss Equation (RUSLE) and select the most effective mulches for your site. Don't leave anything to chance. Ask the Conwed Fibers experts.

Select the Right Mulch for Your Specific Job

A broad range of Conwed Fibers hydraulic mulches is available for today's hydro-seeder. Each has properties and performance characteristics that make them best suited to different types of sites. You can customize each to meet your specific site requirements.

PRODUCT	APPLICATION	SLOPE	CONTINUOUS MAX. SLOPE LENGTH* (without slope interruption devices)	CONDITIONS	RATE/LBS PER ACRE
Hydro-Blanket® BFM	Erosion Control	≤ 1:1 ≤ 2:1 ≤ 3:1	75 ft	Critical Sites	4,000 3,500 3,000
Conwed Fibers® 2000	Erosion Control	≤ 2:1 ≤ 3:1 ≤ 4:1	30 ft	Moderate	3,000 2,500 1,500-2,000
Conwed Fibers® 1000	General Seeding	≤ 2:1 ≤ 3:1 ≤ 4:1	28 ft	Moderate	3,000 2,500 1,500-2,000
EnviroBlend® with Tack	General Seeding	≤ 3:1 ≤ 4:1	25 ft	Mild	2,500 1,500-2,000
EnviroBlend®	General Seeding	≤ 3:1 ≤ 4:1	23 ft	Mild	2,500 1,500-2,000
Cellulose with Tack	General Seeding	≤ 4:1	20 ft	Mild	1,500-2,000
Cellulose	General Seeding/ Reclamation/ Straw Tacking	≤ 4:1	18 ft	Mild	1,500-2,000

*Maximum slope length is based on a 4H:1V slope (BFM is 3H:1V). For applications on steeper slopes, the maximum slope length may need to be reduced based on actual site conditions.

The #1 Choice of Hydro-Seeders

More hydro-seeders choose Conwed Fibers® wood and wood/cellulose hydraulic mulches than any other brands.

Conwed Fibers set the standard for erosion control excellence when it began operations in 1965. Our wood-fiber hydraulic mulch stood head and shoulders above all other mulches at that time, and it still does. Continual research, thorough testing at leading universities, and the commitment to remain the premium mulch producer has kept Conwed Fibers on top of the competition for all of these years. And now we've introduced the first wood and blended products with a new flocculating agent that takes hydraulic mulch performance to an even higher level.

Manufacturing advancements have gone hand-in-hand with advancements in Conwed Fibers' ingredients and mulch performance.

New ProPlus SLIKSHOT™ Makes Mulch Shoot Better, Work Better

Conwed Fibers offers the only wood and blend products in the industry with the added value of ProPlus® SlikShot™. It's a proven flocculant that acts as a lubricant to slicken the hose and prevent hose clogs common with competitors' mulches. This innovative, proprietary formulation helps mulch:

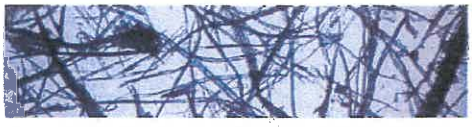
- Shoot easier and farther for improved productivity
- Adhere on impact to provide more uniform ground coverage
- Increase water holding capacity to maximize germination and revegetation
- Increase yield to provide an outstanding value

The addition of SlikShot to our mix is just the latest in a long line of new ingredients designed to deliver optimum performance. No matter what type of mulch – wood, blend or cellulose, our unsurpassed expertise in the industry and commitment to total quality continue to make Conwed Fibers hydraulic mulch second to none.

Superior Fibers Deliver Superior Results for Fewer Callbacks

Nothing illustrates Conwed Fibers superior quality than a comparison of our wood fibers to those of our competitors.

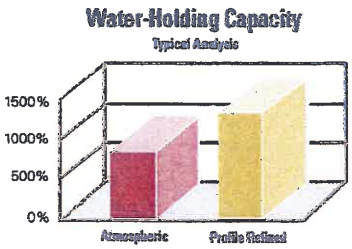
Fibers magnified 45 times by independent lab specializing in fiber analysis.



Conwed Fibers' Thermally Refined wood fiber holds 13.5 times its weight in water to promote faster, more complete germination. Say goodbye to callbacks due to washouts or poor turf establishment.

Competitors use atmospherically refined wood fiber which results in up to 50% less water holding capacity and less yield. It's one reason you need extra bales of competitive mulch to equal the performance of Conwed Fibers.

Thermally Refined® wood fiber holds up to 50% more water than atmospherically refined wood fiber – a critical factor in seed germination.



Thermally Refined wood utilizes heat and pressure that breaks wood down into more fibrous material with greater surface area that results in mulch with:

- Greater yield – reduces the number of bales you buy and load
- Greater coverage – reduces callbacks due to washouts
- Greater water retention – reduces callbacks due to poor turf establishment
- Greater productivity – eliminates clogs from the coarse fiber found in competitive mulches
- Lower total project cost

Ask your Conwed Fibers representative to conduct a side-by-side demonstration that leaves no doubt: Thermally Refined fiber performs better!

The Best Mulch for Any Job

Conwed Fibers' mulch products are ideal for a wide range of applications including turf establishment, golf courses, landfills, highway work, reclamation projects, airports and recreational areas.

Convenient 50-lb Bales

BFM

Hydro-Blanket® BFM

- The industry's leading Bonded Fiber Matrix (BFM) from Profile Products delivers a much higher level of performance than any standard hydraulic mulch or competitive BFM on the market today.
- Independent testing and years in the field prove Hydro-Blanket is effective on the steepest, roughest sites — a critical consideration for Phase II compliance.
- Hydro-Blanket is ideal for projects where blankets are impractical and/or too expensive, and conventional hydraulic mulches are ineffective.
- Produced from Thermally Refined® wood fiber and combined with 10% cross-linked hydrocolloid tackifier, Hydro-Blanket applies more easily, promotes faster germination and minimizes sediment and water runoff. Its performance is comparable to blankets, yet its cost is significantly less.

WOOD

Conwed Fibers wood and wood with tack products are ideal choices for critical sites with up to 2:1 slopes. Contractors report that our Thermally Refined fiber delivers up to 30% more yield than competitive products, which means money in their pockets.

Conwed Fibers® 1000 with SlikShot™

- Contains 100% of the highest quality wood fiber.
- Now with SlikShot for better yield, better shooting and better ground coverage.
- Thermally Refined wood fiber delivers up to 50% more water holding capacity than atmospherically refined wood mulches.

Conwed Fibers® 2000

- 100% wood fiber just like Conwed 1000 but with a premium tackifier included.
- Tackifier is a pre-blended high-viscosity, organic guar-gum tackifier.
- Eliminates the extra step and mess of field mixing.

BLEND

Conwed Fibers' EnviroBlend® and EnviroBlend® with Tack combine 100% Thermally Refined wood fiber with the highest quality cellulose mulch in the industry.

- Delivers up to 15% greater yield to contractors versus competitive blend products.
- Covers up to 20% more ground than cellulose and provides superior erosion control and more complete germination without a big jump in price.

EnviroBlend with SlikShot

- The #1 selling blend in the industry.
- Now with SlikShot for better yield, less hose clogging and better ground coverage.

EnviroBlend with Tack

- Same quality wood and cellulose blend as EnviroBlend but with a pre-blended 3% polymer tackifier for a stronger bond and added holding power.
- Eliminates the extra step and mess of field-mixing tackifier.

CELLULOSE

Conwed Fibers® Cellulose
Conwed Fibers® Cellulose with Tack

- Exclusive defibration process and new manufacturing process improves water holding capacity by 22%.
- Less percentage of fines greatly reduces maché effect.
- High-quality, clean 100% cellulose fiber mixes in water at an accelerated rate and stays in suspension for more uniform consistency.
- Provides erosion control that is superior to straw for nearly the same cost making them ideal for general seeding.
- Darker, richer green color than competing brands gives your work a more professional look from the very beginning.
- Shoots great, allowing hydraulic machinery to run efficiently while providing excellent ground coverage.

Conwed Fibers Cellulose with Tack

- Comes pre-blended with 3% polymer tackifier to increase protection from seed washout and erosion.
- Eliminates the extra step and mess of field-mixing tackifier.

We've Got You Covered

No matter what the site or what the type of hydro-mulch equipment you use, wherever bare soil needs to be covered, Conwed Fibers® has the material best suited to the job. Our complete line provides you with every option you need.

Jet Spray® with FiberMax™ — Pourable Mulch Flakes Save You Time and Money

- Holds more water for enhanced seed germination and more effective erosion control
- Delivers 50% of FiberMax® for greater yield and better coverage, which means you buy and load less material
- Flocculating tackifier helps increase yield and gives the mulch matrix greater loft for more water holding capacity and a stronger bond
- Designed specifically for the smaller tank openings of jet-agitated hydraulic machines, loads up to 90% faster than traditional hydraulic mulch
- Increases productivity while delivering professional results

Seed Aide®— Perfect for Small Jobs

- Expanding cellulose/wood fiber mulch granules are ideal for small areas
- Can be applied with a high volume drop spreader, large-opening broadcast spreader or by hand
- Great leave behind for touch ups after hydro-seeding to help eliminate callbacks
- Tests prove that granular properties and texture result in greater water absorption and soil coverage than competing brands for superior seed protection
- Organic tackifier reduces soil erosion, water runoff and seed washout

Futerra® Revegetative Blankets

- Futerra® F4 Netless® and EnviroNet® blankets are proven to keep soil in place with 99.9% effectiveness, providing better slope protection with faster, thicker vegetative establishment than traditional blankets and nets
- Designed to minimize danger to wildlife or maintenance equipment
- Costs less than half the price of installed sod, including seed and fertilizer
- Takes just one man-hour to lay 3,000 square feet of Futerra versus one man-hour to lay 500 square feet of sod
- Improves site logistics—one truckload of Futerra EnviroNet covers eight acres, compared to a truckload of sod that only covers one-quarter of an acre

So Effective, It's Almost Perfect

	C-Factor[1]	Effectiveness Rating	Soil Loss/ Plot[2]
Futerra® F4 Netless®	0.001	99.9%	0.4 lb
Futerra® EnviroNet®	0.003	99.7%	1.4 lb
Single-Net Straw Blanket	0.073	92.7%	28.9 lb
Single-Net Excelsior Blanket	0.075	92.5%	29.8 lb
Bare Soil Control	1.000	0.0%	397.0 lb

[1]Test Conditions — UWRL Rainfall Simulator, Slope Gradient — 2.5H:1V Soil Type — sandy loam, Rainfall Event — 5"/hr, Test Duration — 1 hr
[2]Plot size 4' by 19.5'

Superior Germination

Futerra® Revegetative Blankets are ideally suited for areas where conventional practices are inadequate for establishing rapid and uniform vegetation. Through its patented design, Futerra is capable of absorbing and holding more water, thereby creating a moisture reservoir that ensures improved germination—nearly double that of straw!

Get all the Facts

Log on to www.profileproducts.com.

Put Added Value in Every Tank with ProPlus® Hydro Mulch® Solutions

Conwed Fibers® offers you the industry's most comprehensive line of hydraulic mulch additives to achieve maximum performance under virtually every condition. These accessory products are specifically designed to solve real-world seeding challenges that contractors face every day. Your Conwed Fibers distributor can help you analyze site conditions and recommend the best mix for the job. ProPlus® hydraulic mulch additives include:

Soil Amendments

NEW • **Aqua-pHix™ Hydro** – Proprietary liquid formula of non-hazardous and non-corrosive, self buffering, chelated organic and inorganic acids that immediately lower pH of alkaline soils. Dramatically enhances seed germination.

Packaging: 2-2.5 gal jugs per case

NEW • **JumpStart™** – Proprietary liquid reformulation with long-term penetrating agent added to humic acid and beneficial bacteria solution. Proven to promote faster germination and vegetation establishment.

Packaging: 2-2.5 gal jugs per case

NEW • **BioPrime™** – Granular formulation containing biostimulant, 18-0-0 slow release nitrogen, humic acid and Endo Mycorrhizae. Designed to sustain long-term plant vitality.

Packaging: 40-lb bag

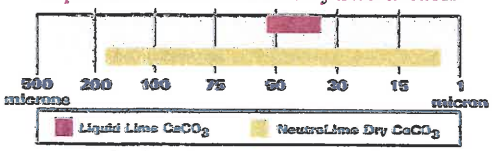
• **NeutraLime™ Dry** – Nothing balances soil pH faster – within 6-10 days of application – with the added plus of longer control – up to 18 weeks. Contains 50% more active ingredients than liquid lime.

Packaging: 4-10 lb bags per case, 40-lb bag

• **NeutraLime™ Liquid** – Balances soil pH and is effective in 7-10 days.

Packaging: 2-2.5 gal jugs per case

Liquid Lime vs NeutraLime Dry Effectiveness



Graduated particle sizing extends minimum effectiveness from 12 to 18 weeks.

• **JumpStart™ 5** – Jump start turf establishment with the industry's most complete package of growth stimulants and added polymers.

Packaging: 4-10 lb bags per case, 40-lb bag

• **AquaGel™ A, B, C, D** – Four ways to hold 400 times the water in a variety of applications, making it an excellent water management tool.

Packaging: 6-5 lb pails per case (A and C only), 2-16 lb jugs per case, 25-lb bag and 50-lb drum

Fiber Mulch Amendments

• **FiberBond Ultra™** – Enhances the performance of hydraulically applied fiber mulch materials.

Packaging: 4-7.5 lb bags per case

• **FiberMax™** – Maximize yield and mulch performance with a stronger bond and the added plus of better shooting.

Packaging: 6-5 lb bags per case

• **FiberLock™** – Patented, crimped fibers are your key to increased yield and sure success on the really long slopes.

Packaging: 10-lb case

• **SlikColor™** – The only dye marker with the added plus of a slickifier to improve shooting – now in water soluble bags.

Packaging: 2-11 lb jugs per case, 11-1 lb bags per case (water soluble bags)

Soil Stabilization & Dust Control

• **TackDown™** – The binder you need to make sure you've got the job nailed.

Packaging: 2-2.5 gal jugs per case, 250 gal tote

• **FlocLoc™ (PAM) Dry** – A flocculating soil stabilizer that coagulates suspended soil particles, dropping them from runoff. It reduces soil erosion and improves water infiltration into the seedbed.

Packaging: 6-3 lb jugs per case, 40-lb pail

Tackifiers

• **ConTack®** – 100% guar-based organic tackifier reduces the need for reseeding and minimizes soil erosion by stabilizing mulch and straw. It also helps increase the flow and pumping properties of mulch.

Packaging: 8-5 lb bags per case, 50-lb bag

• **ConTack® AT** – A starch-based agricultural tackifier, ConTack AT is an economical choice for tacking straw or hay mulch to enhance germination by holding seed in place and preventing washouts.

Packaging: 50-lb bag

• **Tacking Agent 3®** — Requires no cure time to be effective! University tests and field use prove it effectively reduces soil erosion and water runoff immediately after hydro-seeding. Also increases the water holding capacity of all types of hydraulic mulches.

Packaging: 4-8 lb bags per case, 25- and 50-lb bag, 7-3 lb bags per case (water soluble bags)

• **MPT™ Tack** — A combination of poly-acrylamide and hydro-colloid polymers, MPT is highly viscous and dries to form a strong chemical bond. Ideal for fiber mulch binding, straw and hay mulch tacking.

Packaging: 4-12 lb bags per case, 50-lb bag

Please refer to the ProPlus brochure for specific application rates and conditions.

Conwed Fibers® • www.conwedfibers.com • 800-508-8681 • Fax 847-215-0577

PROFILE Products LLC • 750 Lake Cook Road • Suite 440 • Buffalo Grove, IL 60089

CF-12
1/09

CONWED FIBERS®

RESPONSE ACTION
SOIL SAMPLING AND ANALYSIS PLAN

FOR THE
EXIDE TECHNOLOGIES UNDEVELOPED BUFFER PROPERTY
FRISCO, COLLIN COUNTY, TEXAS

PREPARED BY:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
(512) 671-3434

APRIL 1, 2014

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1.0 OBJECTIVE

This Soil Sampling and Analysis Plan (Plan) has been prepared to describe sampling and analysis methods and procedures to be used in conjunction with response action activities consisting of removal of certain affected soils at the Exide Technologies Undeveloped Buffer Property (the Site), in Frisco, Texas. Removal of this soil is being conducted based on the results of the affected property assessment performed for the Site as part of Texas Commission on Environmental Quality (TCEQ) VCP Project No. 2541. The objective of this Plan is to describe the procedures for soil sampling and analysis to be conducted as part of the response action activities. Two types of sampling and analytical activities will be performed, 1) discrete confirmation samples will be collected from the base and sidewalls of the remediated areas to confirm that residual concentrations are within remediation goals; and 2) composite samples will be collected from excavated soils for waste classification purposes. Soils will initially be removed to the depth indicated by the data collected as part of the affected property assessment. The excavated area will be screened using a X-ray fluorescence meter (XRF) to identify areas potentially requiring additional excavation. Post-excavation confirmation samples will be collected for laboratory analysis following removal of the soils. Excavated soils will be stockpiled, and samples collected and analyzed, to characterize the material for disposal. Based on previously collected Toxicity Characteristic Leachate Procedure (TCLP) data, soil excavated from areas containing concentrations of lead greater than 3,000 mg/kg, will be placed in roll off containers to segregate it from other soils. Material placed in the roll off containers will be analyzed to characterize the material for disposal.

2.0 BACKGROUND

The Undeveloped Buffer Property (the Site) consists of 13 tracts of vacant land totaling approximately 170 acres surrounding the former Exide Technologies Frisco Recycling Center (Former Operating Plant, FOP). The Exide Technologies (Exide) FOP recycled lead-acid batteries and operated as lead smelter until late November 2012. The FOP is located at 7471 South Fifth Street in Frisco, Collin County, Texas. The Site was used for agricultural purposes since the early 1900s. With the exception of a demolished residential structure and two barns in various states of deterioration, no buildings or other improvements are present at the Site. The majority of the Site is vacant land/fields with limited areas of dense vegetation. Segments of Eagan Way and former 5th Street are also located within the Site.

Investigation activities conducted at the Site in 2012 and 2013 identified soils containing lead at concentrations exceeding an assessment level of 250 mg/kg present at areas of the Site near the FOP and along the former South 5th Street south of the facility. Cadmium concentrations at the Site were not found to exceed the TRRP residential cadmium assessment level. Elevated lead concentrations observed in the upper few inches of soil are presumed to be associated with atmospheric deposition of lead from the adjacent FOP. Elevated lead concentrations in soil from an undetermined source in areas along the former South 5th Street extend to slightly greater depths (1-2 feet below ground surface, top of bedrock). On-site surface soil in an area adjacent to the former Circuit Fab facility (located off-site) contains elevated concentrations of copper, assumed to be related to runoff from past firefighting at the Circuit Fab facility in 1988. An on-site area adjacent to Parkwood Drive contains debris (e.g., broken concrete, asphalt) with lead concentrations exceeding the assessment level.

3.0 SAMPLE LOCATIONS, FREQUENCY, EQUIPMENT AND PROCEDURES

3.1 Post-Excavation Confirmation Sampling

Lead-affected soils will be excavated from the impacted areas and stockpiled on plastic near the excavation area. A hand-held XRF meter will be used as a screening tool to evaluate lead concentrations in remaining soil. Any areas potentially containing concentrations of lead >250 mg/kg will be further excavated. When excavation is considered complete, post-excavation confirmation samples will be collected for laboratory analysis to confirm that remaining soils do not contain lead at concentrations exceeding the response action objective of 250 mg/kg or cadmium exceeding the critical PCL of 52.4 mg/kg.

Specific sample locations will be determined in the field and will be dictated by the conditions in the excavated area. Sample locations will be chosen in a manner to achieve the most representative sample in the sample area. Sample locations will be marked with a stake, pin-flag or other marking device so that the location can be recorded. Sample information will be recorded in a field log at the time of collection and will include the sample ID, date and time of collection, and any applicable notes regarding the sample (i.e., bedrock, waste/debris present).

Post-excavation confirmation samples will be collected from the upper few inches of the base of each excavation area at a frequency of one sample for each 2,500 square foot area (approximately 50 x 50 feet). In areas where excavation is completed to bedrock/limestone, the base confirmation samples will be collected by breaking up pieces of the bedrock to be pulverized and analyzed. Confirmation samples will also be collected from the ground surface (0-3 inches) along the sidewalls of shallow excavations (0-1 ft) at a frequency of one sample per 100 linear feet of sidewall or on each of the four sides for smaller excavations. Confirmation samples will be collected from the sidewalls of deeper excavation at approximately one-half of the excavation depth.

Post-excavation confirmation samples will be collected using hand tools such as a trowel or shovel. Samples will be collected from the upper few inches of soil in the base of the excavation, or ground surface for excavation perimeter samples. If samples are to be split with another party, the soil will be placed into a zip-loc bag for homogenizing before being placed in the sample containers. Sampling equipment will be decontaminated between each use by removing any

gross soils, washing the tool with a phosphate-free detergent solution, and then rinsing with tap water followed by rinsing with de-ionized/distilled water.

3.2 Stockpile Sampling

Excavated soils will be staged on plastic sheeting (minimum 6 mil thickness) in approximately 250 cubic yard stockpiles (an area of approximately 30 x 30 feet) adjacent to the excavation area. As a result of the excavation, transfer and stockpiling process, excavated material will be thoroughly mixed prior to placement in stockpiles. Samples of the excavated material will be collected from the stockpiles for the purpose of waste characterization/classification. A composite sample will be collected from the stockpiled material at a frequency of approximately one sample for every 250 cubic yards of material (each stockpile). A five-part composite sample will be collected directly from the loose stockpile using a gloved hand and/or decontaminated/disposable soil sampling equipment (e.g., trowels). Soil will be collected from the upper 12 inches of each stockpile at five separate, random, representative areas and combined in a large plastic bag. The material will then be homogenized and a sub-sample will be placed in laboratory-supplied sample jars, labeled with the sample identification, date, and time of collection.

Sampling equipment will be decontaminated between each use by removing any gross soils, washing the tool with a phosphate-free detergent solution, and then rinsing with tap water followed by rinsing with de-ionized/distilled water. No field QA/QC samples are proposed to be collected as part of the stockpile sampling activities.

3.3 Roll Off Container Sampling

Soils excavated from areas along former South 5th Street where lead concentrations greater than 3,000 mg/kg were observed during the Site investigation activities will be placed in roll off boxes to segregate the material for testing and disposal. Preliminary Toxicity Characteristic Leaching Procedure (TCLP) test results performed on in-situ soil samples are presented on Table A2-1 in Appendix 2. These data suggest that soil containing lead concentrations greater than 5,000 mg/kg may be characteristically hazardous based on the potential for lead to leach from the soil. A value of 3,000 mg/kg is used as a conservative criterion for segregating excavated soils potentially requiring disposal as hazardous material.

Each roll off box will contain approximately 10 to 12 cubic yards of soil. A composite sample will be collected from the roll off box material at a frequency of one sample per roll off box. The process of excavating and loading the soils into the roll off boxes will sufficiently mix the soil such that material collected from the surface of the roll off box is representative of the contents of the box. A five-part composite sample will be collected directly from the loose/surface material using a gloved hand and/or decontaminated/disposable soil sampling equipment (e.g., trowels). These discrete samples will be combined directly into a sampling container (e.g., jar or bag) and will then be thoroughly mixed prior to placement in a pre-cleaned, laboratory-supplied glass soil sample jar.

Sampling equipment will be decontaminated between each use by removing any gross soils, washing the tool with a phosphate-free detergent solution, and then rinsing with tap water followed by rinsing with de-ionized/distilled water.

3.4 Quality Assurance/Quality Control

One stockpile sample field duplicate and one verification sample field duplicate will be collected for each day those types of samples are collected. An equipment blank sample will be collected from the decontaminated sampling equipment (e.g., trowels) used for verification sampling each day verification samples are collected (using reusable equipment). No equipment rinsate sample will be collected in conjunction with stockpile or roll off box sampling.

4.0 SAMPLE DESIGNATION

The sample identification system for the project has been designed to uniquely identify each sample location and sample. The numbering system utilizes the existing grid layout implemented for the affected property assessment and includes the sampling grid, an identifier for sample type (confirmation or waste classification), and QA/QC identifier if applicable. Sample identification will use the following format:

X-X #-# Where X-X represents the grid cel i.e., M-17 and #-# represents the sample ID i.e., CS-1. Sample ID M-17 CS-1 would represent post-excavation confirmation sample 1 in grid M-17.

Potential sample ID's include "CS" for post-excavation confirmation samples, "SP" for stockpile samples, and "RO" for samples collected from roll off boxes. Additional identifiers may be appended to the sample ID to indicate a field QA/QC sample, a specific sample depth, or a second sample from the same location following additional excavation.

Sample locations will be marked at the time of sampling and the coordinates of the sample locations recorded using a differential GPS.

5.0 SAMPLE HANDLING AND LABORATORY ANALYSIS

5.1 Post-Excavation Confirmation Samples

5.1.1 Sample Handling and Analysis

Following sample collection, sample jars will be placed in boxes or ice chests and handled under chain-of-custody procedures. Samples will be delivered to the analytical laboratory by sampling personnel, courier, or overnight delivery service. Post-excavation samples collected from areas impacted by lead will be analyzed for lead and cadmium. Post-excavation samples collected from the area affected by copper will be analyzed for copper. Samples will be analyzed using EPA Method 6010B/6020A. Since the samples will be analyzed for lead, cadmium or copper only, no preservation is required (i.e., no ice required in the coolers). The holding time for the selected metals is 6 months.

5.1.2 Quality Assurance/Quality Control

One field duplicate sample will be collected per 20 samples. One equipment blank sample will be collected from the non-disposable equipment each day samples are collected (if used). Analytical data will be evaluated for usability in accordance with the procedures described in TRRP guidance document, *Review and Reporting of COC Concentration Data* (RGG-366/TRRP-13) and for adherence to project objectives. The results of the data usability evaluation will be included in the Response Action Completion Report (RACR) to be submitted upon completion of the response action.

5.2 Stockpile and Roll Off Samples

Following sample collection, sample jars will be placed in boxes or ice chests and handled under chain-of-custody procedures. Samples will be delivered to the analytical laboratory by sampling personnel, courier, or overnight delivery service. The stockpile or roll off samples will be analyzed for the RCRA 8 metals in TCLP extract using EPA Method 1311 TCLP and 6010B/6020A (metals concentrations). Since the samples will be analyzed for TCLP metals only, no preservation is required (i.e., no ice required in the coolers). The holding time for the selected metals is 6 months. Material to be disposed of at a facility other than the on-site Class 2 landfill

may be analyzed for additional constituents to meet the characterization requirements of the specific disposal facility.

6.0 WASTE CHARACTERIZATION AND CLASSIFICATION PROCEDURES

Samples collected from soil stockpiles and roll off boxes will be evaluated to determine the waste classification of the material. The results of the TCLP metals analyses will be compared to the EPA criteria for characteristically hazardous waste to determine whether the waste is hazardous. The results of the TCLP metals analyses will also be used to determine the classification of the waste for disposal. Waste classification will be determined using the following TCLP criteria:

	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Hazardous (mg/l)	≥5	≥100	≥1	≥5	≥5	≥0.2	≥1.0	≥5
Non-haz Class 1 (mg/l)	NA	NA	0.5 - <1	NA	1.5 - <5	NA	NA	NA
Non-haz Class 2 (mg/l)	<1.8	<100	<0.5	<5	<1.5	<0.2	<1	<5

There is no hazardous characterization criterion for copper affected soils.

Undeveloped Buffer Property VCP Investigation
Response Action Plan

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) VCP ID No. 2541
check one: X Initial submittal for this on-site property ___ Subsequent submittal for this on-site property
Report date: April 1, 2014 TCEQ Region No.: 4

TCEQ Program (check one)

[ ] Corrective Action (Mail Code 127)
[X] Voluntary Cleanup Program (Mail Code 221)
[ ] RPR Section (Mail Code 137)
[ ] Superfund PRP Lead (Mail Code 143)
[ ] Municipal Solid Waste Permits (Mail Code 124)

treat

On-Site Property Name: Exide Technologies Undeveloped Buffer Property
Street no. 7471 Pre dir: So Street name 5th Street type: Street Post dir:
City: Frisco County: Collin County Code: 43 Zip: 75034
Nearest street intersection or location description: Undeveloped land located around the former Exide Technologies Frisco Recycling Center, near the intersection of Parkwood Drive and Eagan Way/So. 5th Street.

Latitude: ~~Degrees, Minutes, Seconds~~ OR **Decimal Degrees** (circle one) North 33.14199
Longitude: ~~Degrees, Minutes, Seconds~~ OR **Decimal Degrees** (circle one) West -96.82507

Off-Site Affected Property Information

Off-Site Affected Property Name:
Physical Address: NA
Street no. Pre dir: Street name Street type: Post dir:
City: County: County Code: Zip:

[X] Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Exide Technologies
Contact Person: Matthew A. Love Title: Director, Global Environmental Remediation
Mailing Address: 3000 Montrose Ave
City: Reading State: PA Zip: 19605 E-mail address matt.love@exide.com
Phone: 610-921-4054 Fax: 610-921-4063

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person Matthew A. Love Name, print: MATTHEW A. LOVE Date: 3/31/14

RAP Executive Summary	ID No.: 2541
	Report Date: April 1, 2014

Use this worksheet to summarize the report. Be sure to complete and submit the Checklist for Report Completeness. **Attach a chronology of activities associated with the affected property.**

Briefly describe the affected property and PCLE zones, the conclusions from the assessment activities, identify any affected or threatened receptors, and describe any other major considerations taken into account when developing this response action plan. If any portion of the response action is necessitated due to an aesthetic or nuisance condition, identify the nature of that condition and identify that portion of the response action proposed to address it. If any media that contains a PCLE zone is not addressed in this RAP, provide justification.

The Undeveloped Buffer Property (the Site) consists of 13 tracts of undeveloped land totaling approximately 170-acres surrounding the former Exide Technologies Frisco Recycling Center, a former battery recycling and lead smelting facility (Former Operating Plant, FOP) which operated until late November 2012. The FOP is located at 7471 S 5th Street in Frisco, Collin County, Texas. The Site was used for agricultural purposes dating back to the early 1900s. With the exception of a demolished residential structure and two barns in various states of deterioration, no buildings or other improvements are present at the Site. The majority of the Site is vacant land/fields with limited areas of dense vegetation. Various tracts making up the Site were acquired by Exide Technologies (Exide) or its predecessors between 1983 and 2001 (SWG, 2013). Although battery chips have been found in some discrete and localized areas at the Site, battery recycling or lead smelting operations are not known to have occurred at the Site.

The following media had chemicals of concern (COC) concentrations above critical PCLs (CPCLs):

Surface Soils – Soils at the Site are primarily impacted by lead. The majority of the lead impacts are present in the upper few inches of soil and the concentrations decrease with distance away from the FOP, indicating that these impacts are most likely associated atmospheric deposition. The highest concentrations of lead are found in the upper one to two feet of soil on either side of former Eagan Way/South 5th Street and are related to an unknown source. A small area of surface soil impacted by copper is present in the northeast part of the Site. This area received runoff from fire fighting conducted at an off-site former Circuit Fab facility in 1988, which is believed to have carried the copper onto the Site. Lead impacted soils were also identified in an area containing fill material east of Parkwood Drive. As indicated in the Affected Property Assessment Report (APAR) completed for the Site, lead and copper were found to exceed the applicable critical PCLs, therefore, in accordance with Texas Risk Reduction Program (TRRP) requirements, lead and copper are the COCs to be addressed in the response action. Due to the proximity to the Exide former operating plant, lead and cadmium in airborne dust will continue to be monitored during the response action (see Appendix 6).

Some battery chips were found in several locations during the site investigation. In most cases the battery chips were isolated occurrences and the soils in the vicinity of the battery chips were not impacted. At one location, the undocumented fill area east of Parkwood Drive, occasional battery chips were observed among the debris comprising the fill material (typically broken concrete, piping, glass, plastic and wire). Soil samples collected from two of the five test pit excavations in this area indicated lead concentrations exceeding the applicable cleanup level. PCLE zones are based on COC concentrations in environmental media (soils), not the presence of battery chips since the occurrence of battery chips on the Site is sporadic and is not necessarily associated with affected soils. The excavation areas proposed in this Response Action Plan include fill areas outside the boundaries of the PCLE zones where battery chips were observed in test pits during the affected property assessment (Tract G, See Figure 2A.4). Exide will also remove any other battery chips observed during the excavation activities to be conducted under this plan.

The total area of affected soils at the Site is approximately 17 acres and represents a volume of approximately 24,000 cubic yards of soil.

What is the selected remedy standard for this affected property? X A ___ B

RAP Executive Summary	ID No.: 2541
	Report Date: April 1, 2014

List all media that contains a PCLE zone and specify the proposed response action for each media. Indicate the type of removal, decontamination, physical control and/or institutional control action that is proposed.

Media	COCs[1]	Removal	Decontamination	Control			
				Physical Control	Modified Groundwater Response Objective[2]		
					PMZ	WCU	TI
Shallow Soils	**Lead, copper**	**X**					

Is there a media that contains a PCLE zone that is not addressed in this RAP? ____ yes __X__ no

If yes, provide justification for not addressing the PCLE zone in this RAP.

On-site land use: [ ] Residential [X] Commercial/Industrial*

Off-site land use: [ ] Residential [X] Commercial/Industrial (check all that apply)

*** Residential assessment and cleanup standards are being implemented for this Site. A cleanup standard of 250 mg/kg, one-half of the residential standard, is being used for lead.**

Is this a re-submittal or revision of a previous RAP? ____ Yes __X__ No

If yes, explain why the RAP is being revised or resubmitted.

Were all the appropriate notifications made in accordance with §350.55? ____ Yes ____ No

If no, explain why notifications were not made:

Not Applicable

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).

[2] If a modified groundwater response objective is proposed, check the type(s) of proposed modifications.

Checklist for Report Completeness

ID No.: 2541

Report Date: April 1, 2014

				Report Contents
No ☒	Is the response action a remedy standard B?	☐ Yes →	**Worksheet 2.4** Institutional Controls	☐
		Required	**Worksheet 3.0** Performance Measures and Potential Problems	☒
		Required	**Worksheet 3.1** Monitoring and Sampling	☒
		Required	**Attachment 3A*** Map of Monitoring and Sampling Points	☐
		Required	**Worksheet 3.2** Operation and Maintenance	☐
		Required	**Worksheet 4.0** Confirmation Sampling Plan	☒
		Required	**Attachment 4A*** Map of Confirmation Sampling Points	☐
No ☒	Is the response action a Remedy Standard B?	☐ Yes →	**Worksheet 5.0** Post Response Action Care	☐
		→	**Attachment 5A*** Map of PRAC Monitoring and Sampling Points	☐
		→	**Attachment 5B*** PRAC Costs	☐
No ☒	Does the person, who is a small business, desire to modify the financial assurance requirement?	☐ Yes →	**Attachment 5C*** Small Business Affidavit	☐
		Required	**Worksheet 6.0** Implementation Schedule	☒
		Required	**Appendix 1*** References	☒
No ☐	Was any data collected that was not previously reported?	☒ Yes →	**Appendix 2*** Data Tables and Boring Logs	☒
No ☒	Were any studies or tests conducted?	☐ Yes →	**Appendix 3*** Studies and Tests Documentation	☐
No ☒	Is the response action a Remedy Standard B?	☐ Yes →	**Appendix 4*** Proposed Institutional Controls	☐
No ☒	Are any institutional controls proposed/required on property not owned by the person?	☐ Yes →	**Appendix 5*** Landowner Concurrence	☐
No ☐	Are any of the sample collection or handling procedures different from those reporting in the APAR or other previously submitted report?	☒ Yes →	**Appendix 6*** Sampling Procedures	☒
No ☒	Are statistics or geostatistics proposed to be used as part of the response action?	☐ Yes →	**Appendix 7*** Statistical Methodology	☐
No ☒	Was approval received from the TCEQ regarding the use of different rules to address a media?	☐ Yes →	**Appendix 8*** Split Media Approval	☐

Form contents marked with an asterisk (*) are not included in the blank form.

Chronology	No.: 2541 Report Date: April 1, 2014

Chronology

Date of Report or Event(s)	*Title of Report*/ Assessment Activities	Author/Assessor	Summary of Environmental Assessment and/or Correspondence
April 1, 2014	*DRAFT Affected Property Assessment Report, Exide Technologies Undeveloped Buffer Property, Frisco, Collin County, Texas*	Pastor, Behling & Wheeler, LLC	Draft Affected Property Assessment Report prepared for the Undeveloped Buffer Property
January 16, 2014	Groundwater sampling event	Pastor, Behling & Wheeler, LLC	Newly installed monitoring wells and existing wells in the vicinity of previous arsenic and MTBE detections sampled during this event
January 3, 2014	Soil sampling event, monitoring well installation	Pastor, Behling & Wheeler, LLC	Confirmation soil samples collected at eight sample locations to address potential bias in previously collected data. Installation of monitoring well VCP-MW-13
December 12, 2013	Monitoring well installation	Pastor, Behling & Wheeler, LLC	Installation of monitoring well VCP-MW-12
July 1, 2013	Approval of Phase I Environmental Assessment	Gary Beyer, TCEQ	TCEQ approval of Phase I Environmental Site Assessment prepared for the Undeveloped Buffer Property and APAR scope of work, submitted with VCP application
May 21, 2013	Soil sampling event	Pastor, Behling & Wheeler, LLC	Additional surface soil samples collected
May 15, 2013	Soil sampling event	Pastor, Behling & Wheeler, LLC	Collection of additional surface soil sample in the area near an off-site former Circuit Fab facility
May 7, 2013	Soil sampling event	Pastor, Behling & Wheeler, LLC	Collection of additional vertical delineation samples, excavation of test pits, collection of additional surface soil samples for arsenic analysis
April 29, 2013	Site-wide groundwater gauging event	Pastor, Behling & Wheeler, LLC	Site-wide groundwater gauging event
April 26, 2013	Sampling and analysis of newly installed wells (VCP-MW-9, 10, and 11)	Pastor, Behling & Wheeler, LLC	Assessment of groundwater in NE portion of Site
April 24, 2013	Collection of additional surface soil samples	Pastor, Behling & Wheeler, LLC	Horizontal delineation of impacted soil and soil pH for Tier 2 calculations
April 15, 2013	Installation of 5 monitoring wells	Pastor, Behling & Wheeler, LLC	Assessment of groundwater in NE portion of Site and along So. 5th Street (VCP-MW-7 through 11)
March 11, 2013	Re-sample well VCP-MW-4	Pastor, Behling & Wheeler, LLC	Re-sample well VCP-MW-4 to verify SVOC detects
March 13, 2013	*Community Relations Plan*	VCP Applicants	Community Relations Plan prepared and submitted for VCP project

Chronology	No.: 2541 Report Date: April 1, 2014

Date of Report or Event(s)	*Title of Report*/ Assessment Activities	Author/Assessor	Summary of Environmental Assessment and/or Correspondence
March 19, 21, 22, 2013	Groundwater sampling and analysis	Pastor, Behling & Wheeler, LLC	Assessment of groundwater (VCP-MW-2 through 6, MW-19, MW-20, MW-28)
March 18, 2013	Site-wide grid sampling, focused sampling along So. 5th Street	Pastor, Behling & Wheeler, LLC	Completion of site-wide assessment with ½ acre exposure area assumption, additional surface and shallow soil samples collected along So. 5th Street.
March 5, 2013	VCP Agreement	VCP Applicants	Submittal of the VCP Agreement
February 27 through March 1, 2013	Installation of 7 monitoring wells	Pastor, Behling & Wheeler, LLC	Assessment of groundwater (VCP-MW-1 through 6, MW-28)
February 26, 2013	*Phase I Environmental Site Assessment*	Southwest Geoscience	Submittal of Phase I ESA
October 25, 2012	VCP Application	VCP Applicants	Submittal of VCP Application
May 2012	Surface soil sample collection	Pastor, Behling & Wheeler, LLC	Follow-up grid sampling
March 2012	Surface soil sample collection	Pastor, Behling & Wheeler, LLC	Initial grid sampling
January 12, 2012	Monitoring well installation	Pastor, Behling & Wheeler, LLC	Installation of MW-19 and MW-20

1 Response Action Objectives

Use this worksheet to describe the objectives for the response action in each media.

Response Action Objectives

List the environmental media to which this applies **Surface soil (0-15 ft below ground surface)**
Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

Surface soils in certain areas of the Site are impacted with lead from the adjacent former battery recycling facility as reported in the APAR being submitted concurrently with this document (PBW, 2013a). The majority of the area requiring a response action contains impacted soil in the upper few inches of the soil column. Other areas requiring response actions include soil impacted with lead from an unknown source along the former South 5th Street (up to two feet below ground surface), lead-containing fill/debris material (up to five feet below ground surface) in an area northeast of Parkwood Drive, and copper in the upper few inches of soil in an area in the northeast part of the Site that received run-off from firefighting activities at an off-site circuit board manufacturing facility. The areas of the Site proposed to be remediated as part of this response action are presented on the Figures 1A.2 through 1A5 (PCL exceedance zones).

A Residential Remedy Standard A response action objective is proposed for the shallow soils at the Site in accordance with TAC §350.31 and 350.32, and the associated guidance documents *Application of Remedy Standards A & B* (TCEQ, 2008) and *Soil and Groundwater Response Objectives* (TCEQ, 2013), with a modified lead cleanup level of 250 mg/kg, which is one-half of the applicable residential standard. Excavation of these surface soils will be conducted in accordance with the Remedy Standard A response objectives outlined in 30 TAC §350.32(a)(3) and (4). The response action objectives are designed to protect ecological and human receptors from direct exposure to surface soils and meet the cleanup requirements for residential land use. In addition to the activities described in this Response Action Plan, the property will be zoned and deed restricted for commercial/industrial use.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

Affected soils will be excavated, stockpiled pending waste characterization, and transported to the Class 2 landfill located on the adjacent Exide Technologies property (Class 2 waste) or an off-site landfill authorized to accept the material (hazardous or Class 1 waste~~, or treated/stabilized waste~~).

Key components of the removal action include the following:

- **Areas requiring excavation will be located and marked using a differential GPS prior to excavation.**
- **Excavation areas will be cleared of trees and brush prior to excavation beginning. Root/subsurface obstructions will be removed during excavation activities.**
- **A remediation contractor will perform removal, characterization and management/disposal of affected surface soils from the Site that were identified as containing levels of copper or lead at concentrations exceeding the applicable PCLs. A total of approximately 18,000 cubic yards of soil/debris are expected to be removed from the Site.**
- **Battery chips identified in the affected property assessment, and encountered during the response**

action, will be removed.

- **Site workers will utilize appropriate personal protective equipment to mitigate potential exposure to COCs.**
- **Air monitoring will be conducted at the perimeters of the Site during dust-generating activities to determine if concentrations of lead, cadmium and particulate emissions exceed the "Take Action" or "Stop Work" levels established for the response action (see Appendix 6). Dust control procedures will be implemented during the remediation activities to address fugitive dust emissions (see Appendix 6).**
- **Excavated material will be stockpiled on plastic sheeting and sampled for waste characterization (see Sampling and Analysis Plan in Appendix 6). Stockpiled soils will be covered to minimize exposure pending characterization and disposal.**
- **Excavated soils meeting the criteria for placement in a non-hazardous Class 2 landfill will be transported and managed/disposed of at the Class 2 landfill located on the adjacent Exide property or at an appropriate off-site facility.**
- **Excavated soils that do not meet the Class 2 landfill criteria will be transported and disposed of in an off-site landfill authorized to receive the soils (Class 1 non-hazardous or hazardous) based on characterization data.**
- **In areas impacted by lead, residual soils in excavated areas will be screened for lead concentrations using an X-ray fluorescence analyzer (XRF). If XRF readings indicate that impacted soils have been removed, confirmation samples will be collected for laboratory analysis to verify that impacted soils have been removed to the response action objective of 250 mg/kg lead. If XRF screening indicates that elevated concentrations of COCs are still present, additional excavation will be performed until the screening indicates that impacted soils have been removed, followed by confirmation sampling. During this process the XRF data will be compared to initial assessment results or confirmation samples to evaluate the accuracy of the XRF and develop a correlation between the screening values and analytical results.**
- **Confirmation samples will be collected for laboratory analysis following excavation of soils to ensure that all affected soils containing lead or copper at concentrations in excess of the response action objectives have been removed (see Appendix 6).**
- **Upon completion of confirmation sampling, the excavation area will be restored by backfilling and/or grading.**

None of the proposed response action activities are expected to result in any additional exposure conditions.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

It is estimated that the removal actions will be implemented as soon as possible following RAP approval and that time is not a critical factor in limiting potential exposure. The response action is estimated to require approximately 60 days to complete.

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate how that physical control or combination of measures will reliably contain COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

Not applicable, no physical controls are proposed.

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevent COC concentrations above the critical soil PCLs from migrating beyond the existing boundary of the soil PCLE zone.

The removal action will remove soils with lead exceeding the response action objective, which is below the residential standard, agreed to by Exide, the City of Frisco, and the other VCP applicants (250 mg/kg), or copper exceeding the critical PCL (548 mg/kg). Removal will be confirmed through collection of confirmation samples. In the event the confirmation samples indicate COCs with concentrations greater than the 250 mg/kg for lead and 548 mg/kg for copper are still present, additional excavation followed by confirmation sampling will be performed to remove the affected soil until confirmation samples indicate the response action objectives have been achieved.

Groundwater Response Action Objectives – NOT APPLICABLE

Name of groundwater-bearing unit to which this information applies _____

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification ____ 1 ___ 2 ____ 3

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? ___ Yes ___ No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? ___Yes ___No

If yes, complete the appropriate portions of this report.

If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh\text{-}V}$) is exceeded.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

ATTACHMENT 1A

Figure 1A.1 – On-Site Property Map
Figure 1A.2 Affected Property and PCLE Zone Map: M Tract Area
Figure 1A.3 Affected Property and PCLE Zone Map: SW Area
Figure 1A.4 Affected Property and PCLE Zone Map: SE Area
Figure 1A.5 Affected Property and PCLE Zone Map: NE Area

EXPLANATION

- Former Operating Plant Boundary (Approximate)
- Undeveloped Buffer Property Subject to The Voluntary Cleanup Program
- Approximate Farmhouse Debris Area

N

Scale in Feet

0 250 500

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

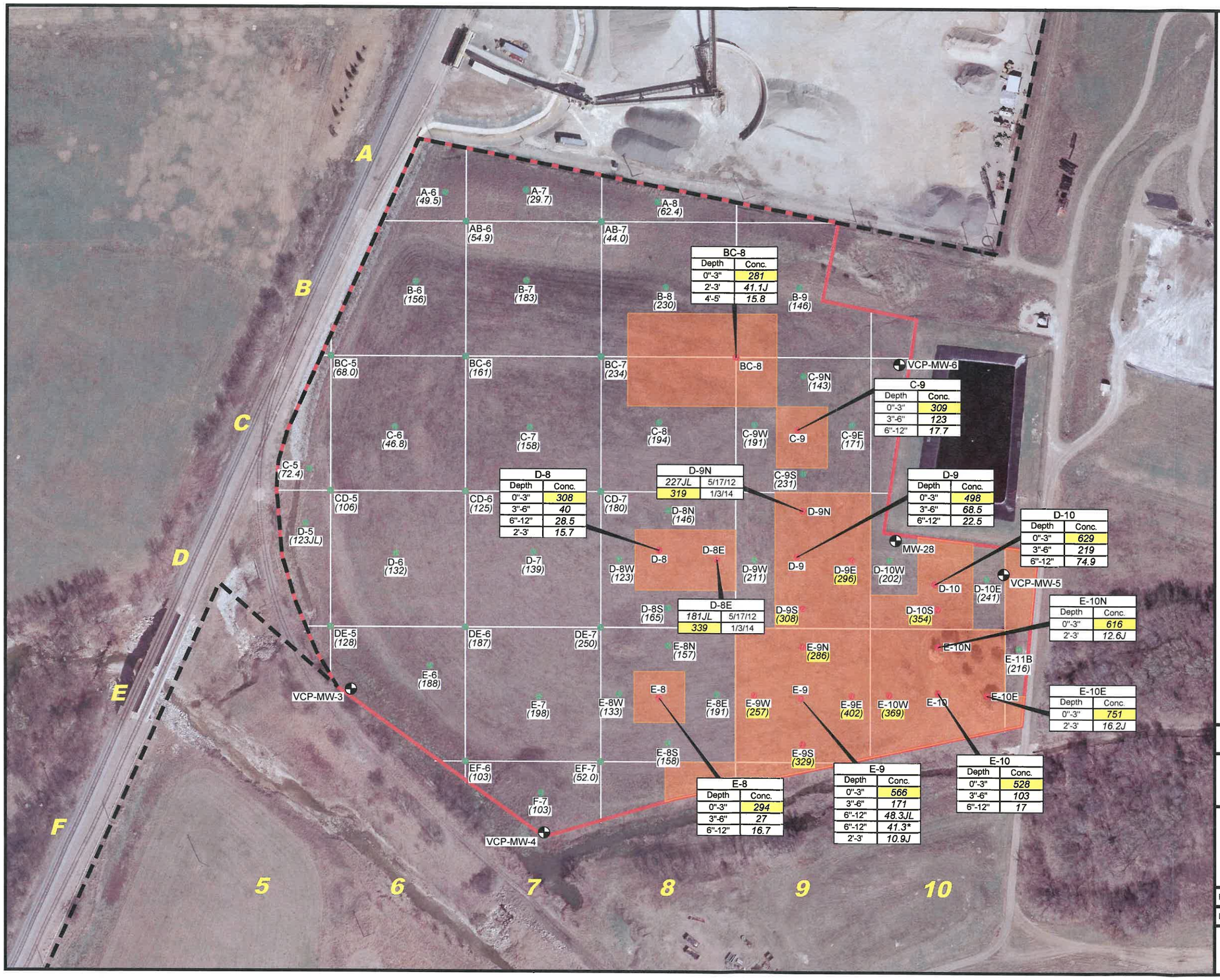
UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.1

ON-SITE PROPERTY MAP

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. JH = Estimated value with potential high bias.
2. JL = Estimated value with potential low bias.
3. Highlighted values exceed the applicable assessment level.
4. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.
5. * Denotes confirmation sample collected 1/3/14.

N

Scale in Feet
0 75 150

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.2

AFFECTED PROPERTY & PCLE ZONE MAP M TRACT AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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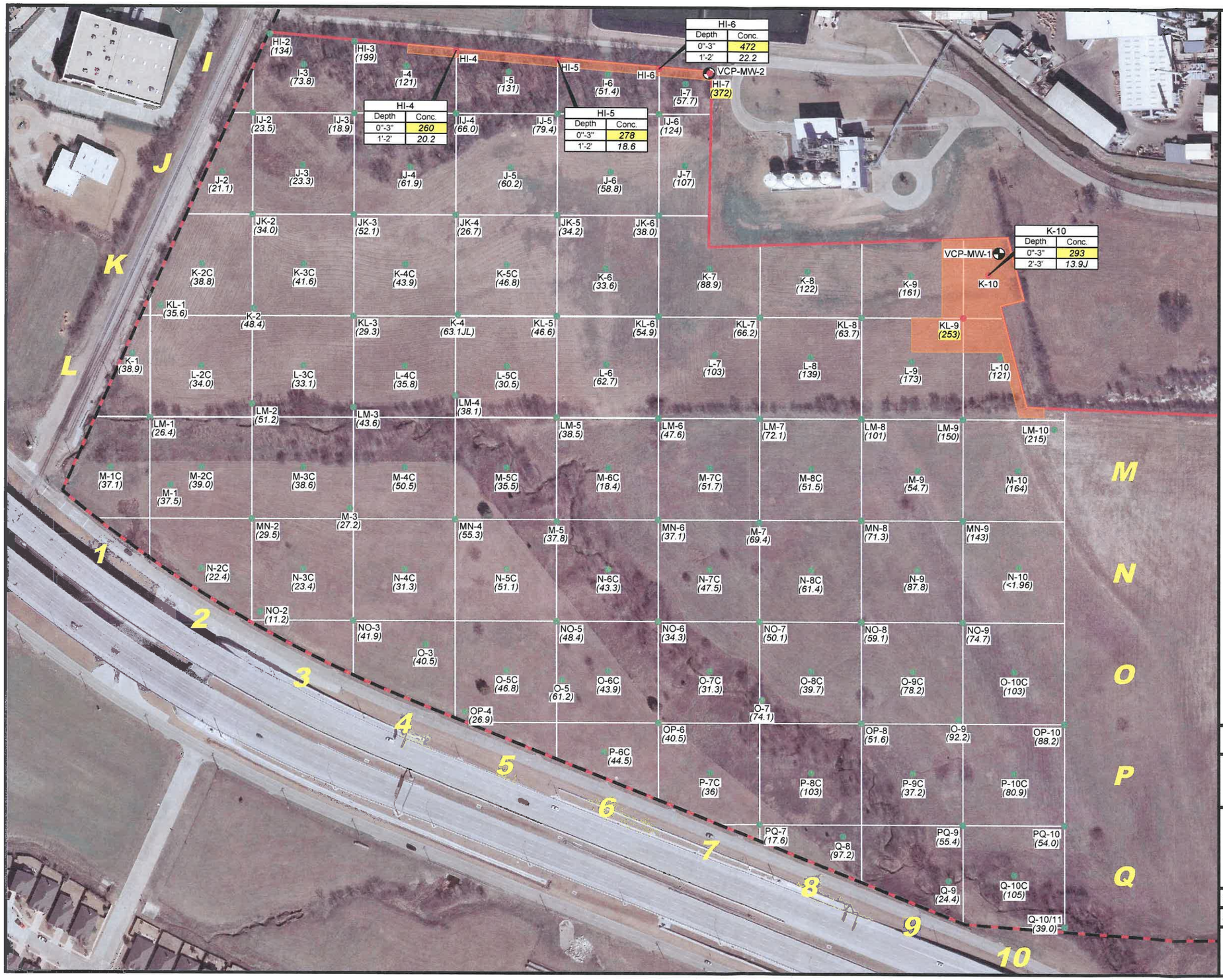

EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. Highlighted values exceed the applicable assessment level.
2. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.

N

Scale in Feet
0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.3

AFFECTED PROPERTY & PCLE ZONE MAP SW AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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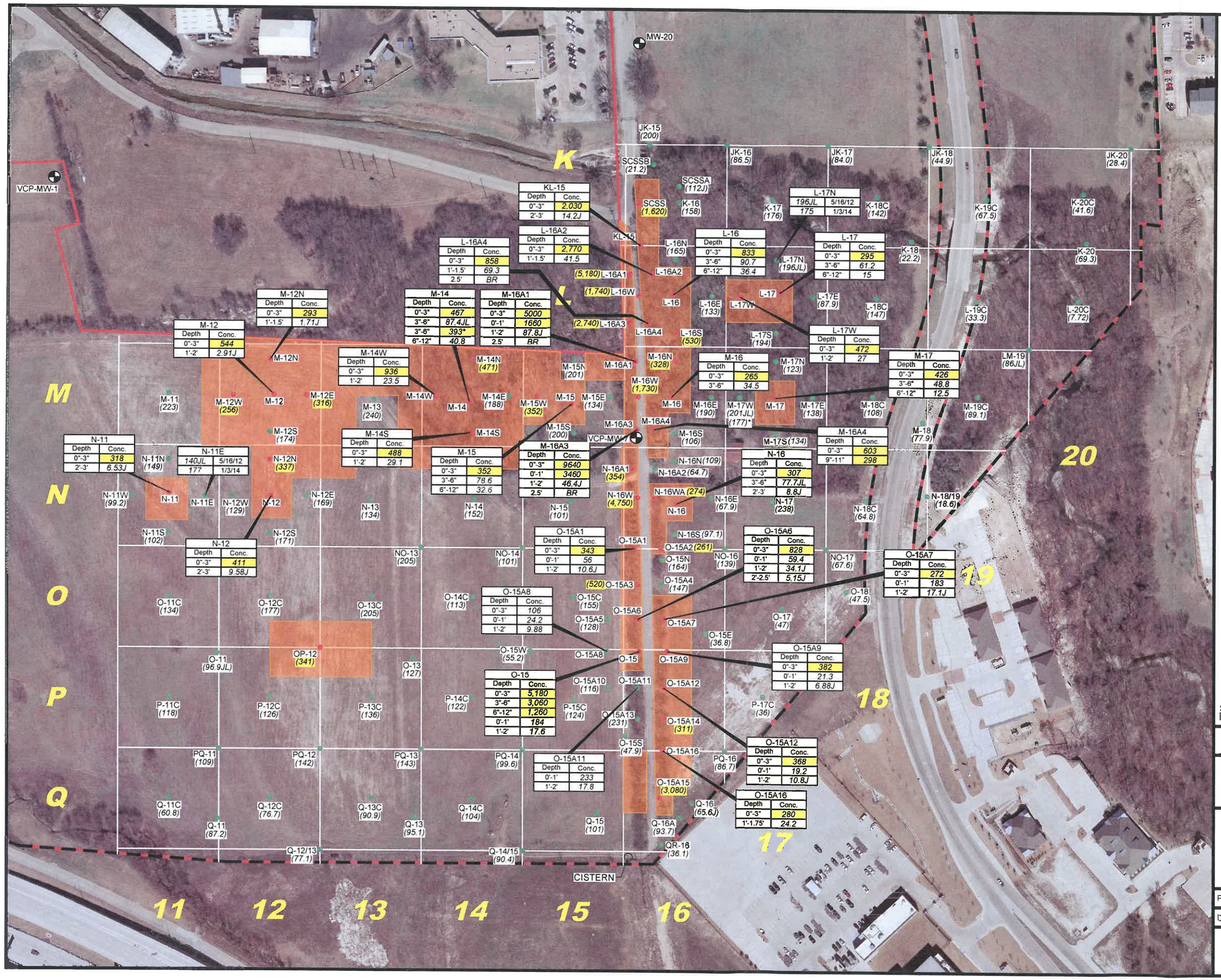

EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. JH = Estimated value with potential high bias.
2. JL = Estimated value with potential low bias.
3. Highlighted values exceed the applicable assessment level.
4. BR = Bed Rock/Limestone encountered at this depth.
5. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.
6. * Denotes confirmation sample collected 1/3/14.

N

Scale in Feet
0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.4

AFFECTED PROPERTY & PCLE ZONE MAP SE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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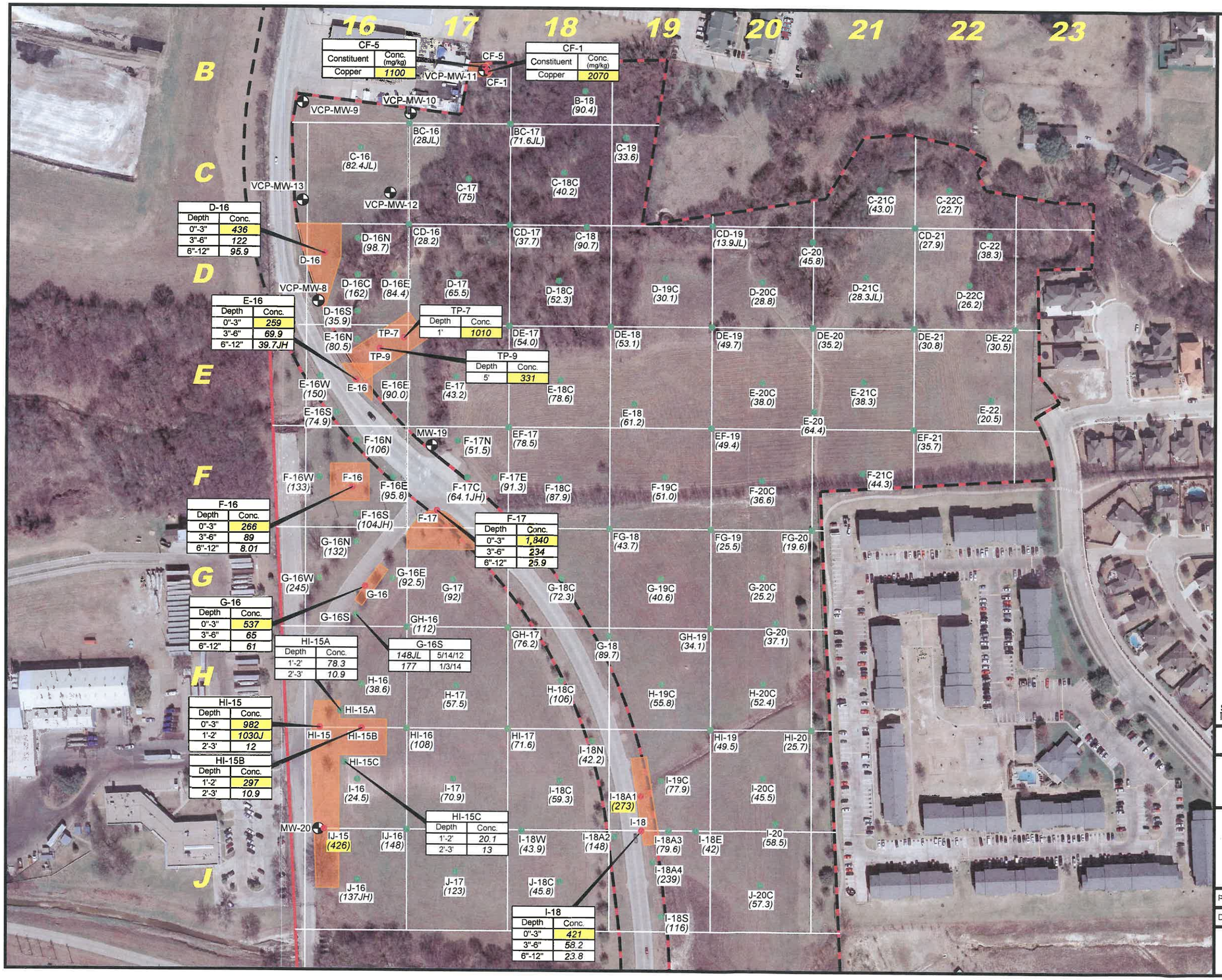

EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- 1 Acre Sample Grid
- Monitoring Well Location
- Surface Soil Concentration Below the Assessment Level
- Surface Soil Concentration Above the Assessment Level
- (1.35) Lead Concentration (mg/Kg)
- PCLE Zone

NOTES:
1. JH = Estimated value with potential high bias.
2. JL = Estimated value with potential low bias.
3. Highlighted values exceed the applicable assessment level.
4. The TRPP Residential Assessment Level for lead is 500 mg/kg, however the assessment level for this site was set at 250 mg/kg based on an agreement between Exide and the City of Frisco.
5. Test Pit and Circuit Fab Area sample locations only shown where COCs exceed the applicable assessment levels.

N

Scale in Feet
0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 1A.5

AFFECTED PROPERTY & PCLE ZONE MAP NE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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2 Response Action Design

Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: **Surface Soil (0-15 feet below ground surface)**
List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

The removal action for surface soils at the Site will be conducted under Remedy Standard A. The removal action has been designed to remove surface soils containing COCs at concentrations exceeding the response action objective (for lead), or the critical PCL (for copper). COC concentration data are shown on Figures 1A.2 through 1A.4 and are also provided in tabulated form in Appendix 2. The proposed excavation plan is presented on the figures provided in Attachment 2A. Soils will be excavated to the vertical extent of the PCLE zones, which are estimated to be:

0-6 inches in areas impacted by aerial deposition of lead (aerial deposition areas)
0-2 feet in the area along South 5th Street (former Eagan Way/South 5th Street)
0-5 feet in the fill area in Tract G (fill material in Tract G)
0-1 feet in the area impacted by copper (copper impacted soil)

Prior to implementation of the response action, the boundaries of the affected areas will be marked with stakes and/or flagging to serve as excavation control points. Prior to beginning land-clearing activities, a Tree Permit for removal of trees during the response action will be obtained from the City of Frisco. In impacted areas containing trees, an arborist will be consulted to ensure compliance with the City of Frisco Tree Preservation Requirements. Prior to excavation, trees and bushes that require removal in affected areas will be removed by cutting close to ground level. Removed trees will be disposed at an off-site facility authorized to accept the material, or will be ground or chipped with the mulch left in place at the Site. Any remaining root structures will be removed during the excavation activities. Root structures will be disposed of with the soil from the area where they were removed.

Excavation Procedures:
Aerial deposition areas: Impacts in these areas are typically limited to the upper three inches of soil. An excavation depth of six inches will be used in these areas (to ensure all impacted soils are removed and to account for the limits of precision using heavy equipment). The estimated volume of material to be removed from these areas is 12,000 cubic yards. An additional 1,000 cubic yards of root balls and other debris is expected to be generated during excavation of these areas.

Former Eagan Way/South 5th Street: The soils in this area are located on top of a limestone outcrop which limits the vertical extent of impacts. The depth of the limestone is typically one to three feet below ground surface; therefore, excavation in this area will be conducted using backhoe and bull dozer equipment to excavate down to the limestone. Where conditions permit (i.e., bedrock can be broken up), confirmation samples will be collected in areas excavated to bedrock. The estimated volume of material to be removed from this area is 2,500 cubic yards.

Fill Material in Tract G: Lead impacts have been detected in fill/debris material (clayey soils mixed with broken concrete, asphalt, bricks, metal and glass) up to five feet below ground surface. Impacted material

in this area will be removed using an ~~small~~ excavator. The estimated volume of material to be removed from this area is 10,000 cubic yards.

Copper Impacted Soil: Copper impacts in this area are limited to the upper one-foot of soil in a 30 x 30 foot square area. This area will be excavated using a small excavator. The estimated volume of material to be removed from this area is 44 cubic yards.

In addition to impacted soils, debris and trash accumulations around the old farmhouse area will also be removed. There are no known threats to human health and the environment from this trash and this activity is not part of the response action. Material removed as part of these activities will be disposed of off-site at a facility authorized to receive the material.

Air quality will be monitored during the excavation activities as described in the Perimeter Air Monitoring and Dust Control Plan provided in Appendix 6. Air monitoring includes real-time measurements of wind speed, wind direction and particulate matter at the perimeters of the Site. Take action and stop work criteria have been established to ensure dust generating activities do not present an undue risk to off-site receptors. Site monitoring data and quality assurance data generated during the response action will continue to be provided to the public and TCEQ in a summary report that will be posted on the Exide Frisco closure website (www.exidefriscoclosure.com).

Soil Handling Procedures:
Excavated soils will be staged on plastic sheeting and stockpile volumes will be approximately 250 cubic yards or less. The stockpiles will be placed outside of the excavation areas on plastic sheeting. Stockpiles will be covered with plastic sheeting when not in use to prevent dust generation and infiltration from rain. Stockpiles will be surrounded by a berm to prevent water runoff/runon.

Soils excavated from areas along former South 5th Street where the lead concentration is greater than 3,000 mg/kg (based on previous sampling) will be placed in roll off boxes to segregate the material for waste profiling. Each roll off box will hold approximately 10 to 12 cubic yards of soil and will be covered with tarps when not in use. Preliminary Toxicity Characteristic Leaching Procedure (TCLP) test results performed on in-situ soil samples are presented on Table A2-12 in Appendix 2. These data suggest that soil containing lead concentrations greater than 5,000 mg/kg may be characteristically hazardous based on their leaching potential. A value of 3,000 mg/kg is used as a conservative criterion for segregating excavated soils that are more likely to be characterized as hazardous. The contents of the roll off boxes will be appropriately labeled and will be removed from the Site within 90 days.

Waste characterization samples will be collected from stockpiled soils and roll offs and analyzed as described below. A five-part composite sample will be collected for each approximately 250 cubic yard stockpile by collecting an aliquot from five separate areas of the pile and combining them to create a representative sample (simple random sampling). Similarly, a five-part composite sample will be created by collecting five discrete samples from within each roll off box and combing them to create the composite sample. The action of excavation and placement of the soils into stockpiles or roll off boxes will sufficiently mix the material that samples collected from the surface of the material are representative of the entire pile. Following sample collection, sample jars will be placed in ice chests and handled under chain-of-custody procedures. Samples will be delivered to an accredited analytical laboratory by sampling personnel, courier, or overnight delivery service. The composite samples will be analyzed for concentrations of the RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) in TCLP extract using EPA Method 1311 (TCLP) and 6010B/6020A (metals concentrations). Additional analyses may be performed to meet any additional requirements of specific off-site disposal facilities.

Waste classification will be determined using the following TCLP criteria:

	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Hazardous (mg/l)	≥5	≥100	≥1	≥5	≥5	≥0.2	≥1.0	≥5
Non-haz Class 1 (mg/l)	NA	NA	0.5 - <1	NA	1.5 - <5	NA	NA	NA
Non-haz Class 2 (mg/l)	<1.8	<100	<0.5	<5	<1.5	<0.2	<1	<5

Following characterization testing, stockpiled soils that meet the criteria for non-hazardous Class 2 waste will be transported to, and disposed of, at the Class 2 landfill on the adjacent Exide property or at an appropriate off-site facility. Soils determined to be hazardous or Class 1 non-hazardous wastes will be transported and disposed of at off-site landfills permitted to accept the material.

Confirmation Sampling Procedures:

Upon completion of the excavation activities in a particular lead-impacted area, a handheld X-ray fluorescence (XRF) meter will be used to screen the base and sidewalls of the excavated area for the presence of lead concentrations exceeding the assessment level. If the XRF screening indicates concentrations of lead greater than 250 mg/kg are present, additional excavation will be conducted in those areas and the area screened again following excavation. During the response action, XRF data will be compared to project data to correlate the accuracy of the XRF. Once excavation has been completed, i.e., all soil exceeding 250 mg/kg lead has been removed, confirmation samples will be collected from the excavation area. Confirmation samples will be collected from the base of the excavation at a frequency of one sample for each 50-foot by 50-foot or 2,500 square foot area and the locations recorded using a GPS. Confirmation samples will be collected from the ground surface (0 to 3 inches) of the perimeter of the excavation area (sidewall samples) at a frequency of one sample per 100 linear feet of perimeter, or one on each side of the excavation if smaller than 100 x 100 ft. Confirmation samples from lead-impacted areas will be analyzed by EPA method 6010B/6020A for total lead and cadmium to ensure that all soils with ~~lead~~ concentrations greater than the target remediation levels have been removed. Confirmation samples from copper-impacted areas will be analyzed by EPA method 6010B/6020A for total copper to ensure that all soils with copper concentrations greater than the assessment level of 548 mg/kg have been removed. The results of the confirmation sampling activities will be summarized in a Response Action Completion Report (RACR) prepared upon completion of the response action.

Restoration Procedures:

Areas of the Site where the excavation depths did not exceed one foot will be re-graded to avoid ponding and ensure adequate drainage. In areas where the excavation depths exceed one foot below surrounding ground surface, the excavation will be backfilled with clean soil excavated during the on-site landfill construction activities that has been stockpiled on a plastic liner at the FOP (see Appendix 2 for sampling information and analytical results). Areas along the former South 5th Street will be restored in a manner to minimize the potential for erosion along the roadway. Restored areas will be re-seeded in accordance with a Stormwater Pollution Prevention Plan (SWPPP) prepared for the Site. Mitigation requirements for trees removed during the response action will be performed in accordance with City of Frisco requirements.

Institutional Controls:

Institutional controls are not required for this response action since the response action meets or exceeds the Texas Risk Reduction Program (TRRP) residential cleanup standard (250 mg/kg for lead and 548 mg/kg for copper). As part of an agreement between Exide Technologies, the City of Frisco, and the other VCP applicants, however, all areas of the Site will be subject to institutional controls consisting of deed recordations and/or restrictive covenants placed on the property that limit future land use to commercial and/or industrial activities and restricting the use of groundwater.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

Excavation will be completed using traditional excavation equipment, primarily bull dozers and excavators. Excavated material to be treated will be contained, treated, and transported off-site in roll off boxes. Figures showing the impacted soils to be addressed as part of the response action are provided in Attachment 2A.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

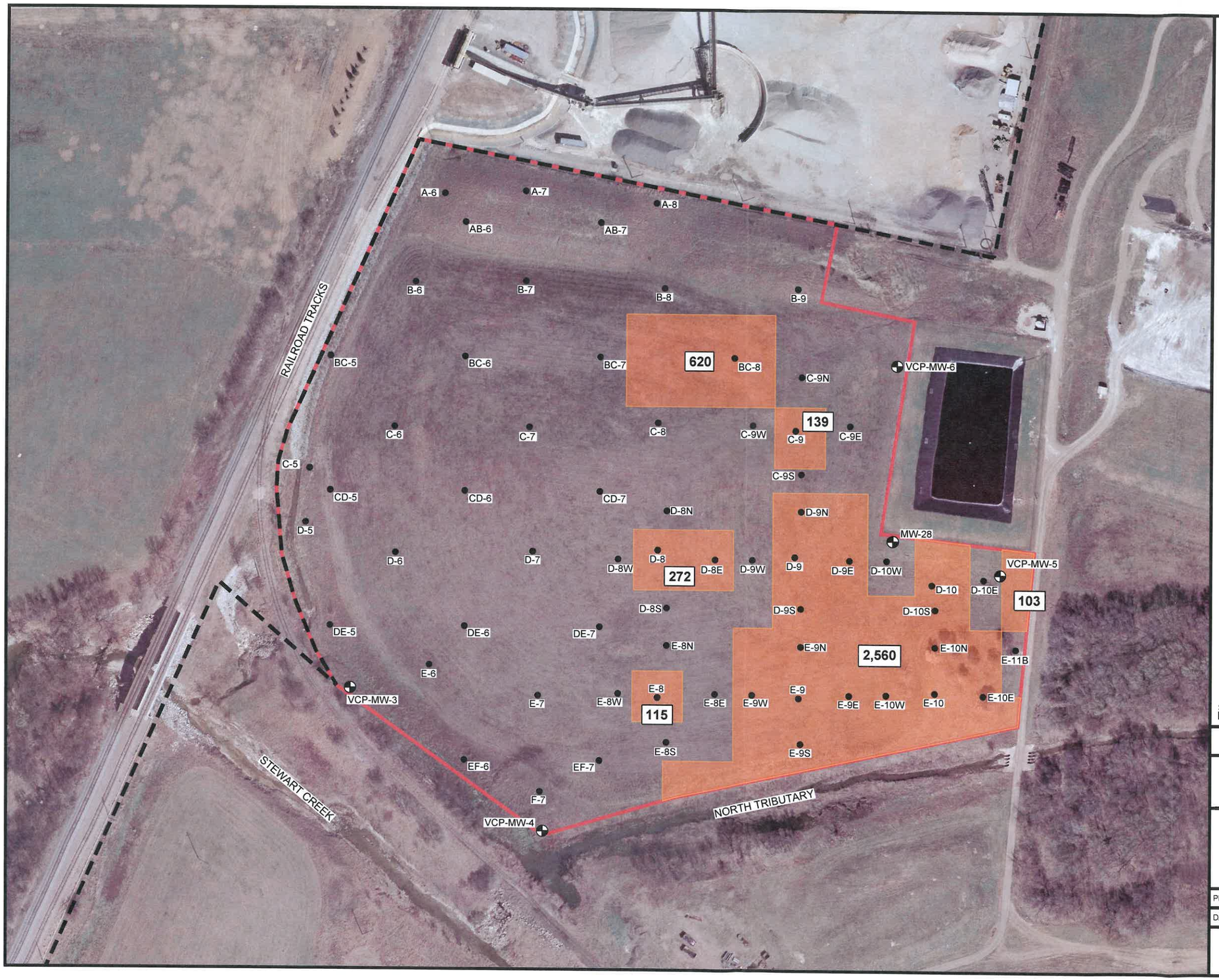
Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
City of Frisco	**Tree Permit**		**Within 30 days of RAP approval**
TCEQ	**Construction SWPPP**		**Within 30 days of RAP approval**
TCEQ	**One-Time Shipment (OTC) temporary Texas registration number, temporary EPA ID number and temporary Texas waste code for a one-time shipment of waste to be disposed of on property other than the Exide Former Operating Plant**		**Within 30 days of RAP approval**

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

None

ATTACHMENT 2A

Figure 2A.1 Soil Excavation Map: M Tract Area
Figure 2A.2 Soil Excavation Map: SW Area
Figure 2A.3 Soil Excavation Map: SE Area
Figure 2A.4 Soil Excavation Map: NE Area



EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- 341 — Approximate Excavation Area Volume (Cubic Yards, bank)

M Tract Area total estimated excavation volume 3,809 cubic yards (bank).

N

Scale in Feet

0 75 150

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.1

SOIL EXCAVATION MAP M TRACT AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
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EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- 181 — Approximate Excavation Area Volume (Cubic Yards, bank)

SW Area total estimated excavation volume 974 cubic yards (bank).

N

Scale in Feet

0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.2

SOIL EXCAVATION MAP SW AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- PCLE Zone and Proposed Excavation Area (0-1')
- Excavated Soils to be placed in containers pending characterization
- 259 — Approximate Excavation Area Volume (Cubic Yards, bank)

SE Area total estimated excavation volume 6,848 cubic yards (bank).

N

Scale in Feet

0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.3

SOIL EXCAVATION MAP SE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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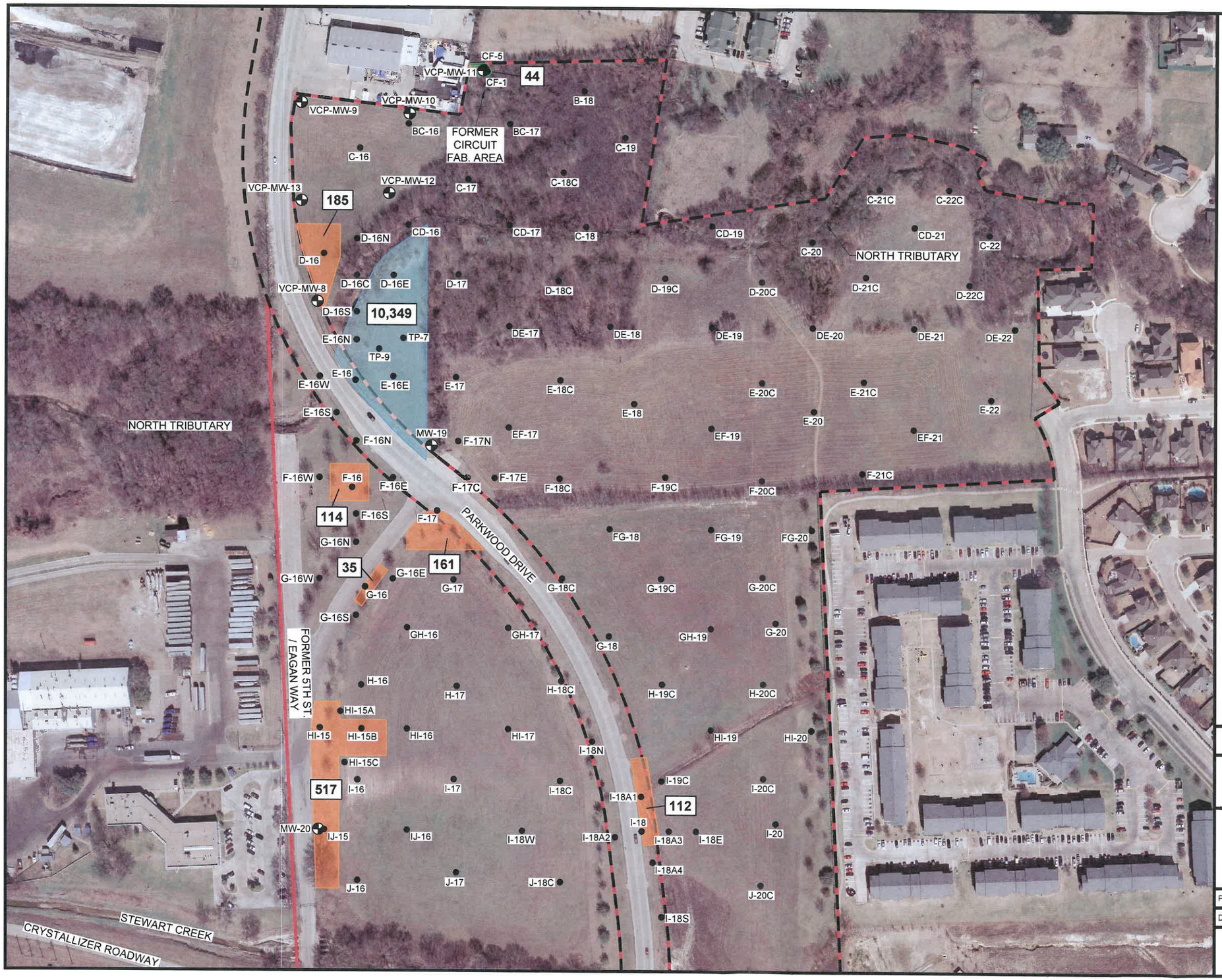

EXPLANATION

- Property Owned By Exide
- Undeveloped Buffer Property
- Monitoring Well Location
- Surface Soil Sample Location
- PCLE Zone and Proposed Excavation Area (0-6")
- PCLE Zone and Proposed Excavation Area (0-1')
- PCLE Zone and Proposed Excavation Area (0-5')
- 136 — Approximate Excavation Area Volume (Cubic Yards, bank)

NE Area total estimated excavation volume 13,025 cubic yards (bank).

N

Scale in Feet

0 100 200

Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure 2A.4

SOIL EXCAVATION MAP NE AREA

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

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3 Performance Measures and Potential Problems

Performance Measures and Potential Problems	RAP Worksheet 3.0 Page 1 of 1	
	ID No.: 2541	Report Date: April 1, 2014

Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that will be used to determine if reasonable progress is being made by the response action in a timely manner. Use these measures to document effectiveness of the response action in the RAER.

The effectiveness of the response action for affected surface soils will be demonstrated by confirmation sampling that indicates COC concentrations in remaining soils are below the response action objectives and/or the critical PCL (250 mg/kg for lead, 52.4 mg/kg for cadmium, and 548 mg/kg for copper). Confirmation samples collected from lead-impacted PCLE zones will be analyzed for lead and cadmium. Confirmation samples collected from copper-impacted PCLE zones will be analyzed for copper.

Potential Problems

Complete the table for the response action. When the response action consists of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: **Soil excavation, stockpiling, disposal, and regrading/backfill**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
COC concentration exceeds response action objective post-excavation	**Potential exposure condition**	**X**		**Continue excavation until COC concentrations in remaining soil are below the response action objectives.**
Dust generation during excavation activities	**Potential exposure condition**		**X**	**Implement additional dust suppression measures, stop work if necessary.**
Exceedance of air monitoring criteria during remediation activities	**Potential exposure condition**		**X**	**Implement additional dust suppression measures, stop work if necessary.**

Monitoring and Sampling	RAP Wo. .heet 3.1 Page 1 of 2	
Associated Information: Attachment 3A	ID No.: 2541	Report Date: April 1, 2014

List the monitoring and sampling of COC concentrations or other parameters that will be conducted during the response action. Illustrate the monitoring or sampling locations in Attachment 3A. If statistics or geostatistics will be used, provide details in Appendix 7. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Soil	**Lead**		**Hand-held XRF analyzer**	**Throughout excavation area**	**Soil surface at base of excavation**	**XRF screening**	**After initial excavation**
	Post excavation confirmation sampling described in RAP Worksheet 4.0						
Subsurface Soil	**None**						
Groundwater	**None**						
Surface water	**None**						
Sediment	**None**						
Air	**Lead, Cadmium**		**Lo-vol cartridge filter samplers**	**Property perimeter**	**NA**	**NIOSH 7300**	**lead and cadmium 3 x per week during work**
	Particulates (PM10)	**wind direction, wind speed**	**E-bam particulate monitors, Site weather station**	**Property perimeter**	**NA**		**Dust/PM10/ wind – continuous monitoring, reported in 30-minute and 60-minute block averages, daily summary report**
Other Media (specify)							

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Monitoring and Sampling	RAP Wo..sheet 3.1 Page 2 of 2	
Associated Information: Attachment 3A	ID No.: 2541	Report Date: April 1, 2014

Explain the reasons for the above-listed monitoring and sampling plan.

During the response action activities, air monitoring will be performed to determine if concentrations of lead, cadmium and particulate emissions are in excess of the "Take Action" or "Stop Work" levels established for the response action (see Appendix 6). A detailed description of the air monitoring program and related dust control program are provided in the Perimeter Air Monitoring and Dust Control Plan included in Appendix 6. Sample locations will be variable depending on wind direction, no Attachment 3A is included.

4 Confirmation Sampling Plan

Confirmation Sampling Plan	RAP Worksheet 4.0 Page 1 of 2	
Associated Information: Attachment 4A	ID No.: 2541	Report Date: April 1, 2014

List the COCs and other parameters that will be sampled to confirm completion of the response action. Illustrate the monitoring or sampling locations in Attachment 4A. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided. If needed, describe the sample collection and handling methods, if not previously provided, in Appendix 6.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Soil	**Lead and cadmium**		**Bulk sampling**	**Excavation areas (lead impacted areas only)**	**Base of excavation**	**US EPA method 6010B/6020A**	**One sample per 50' x 50' area of excavation (or approximate 2,500 square foot area)**
	Lead and cadmium		**Bulk sampling**	**Excavation areas (lead impacted areas only)**	**Perimeter of excavation/ sidewall**	**US EPA method 6010B/6020A**	**One sample per 100 linear feet of perimeter length**
	Lead		**XRF Screening**	**Perimeter and base of excavation areas (lead impacted areas only)**	**Excavation surface**	**NA**	**Determined by excavation progress and data obtained**
	Lead		**Composite sampling (see Appendix 6)**	**Stockpiled soil and soil in roll off boxes (lead impacted areas only)**	**One sample per 250 cubic yard stockpile or roll off box**	**US EPA TCLP preparation and analysis of extract by method 6010B/6020A**	**One time sampling for waste characterization**
	Copper		**Bulk sampling**	**Circuit Fab excavation area**	**Base of excavation**	**US EPA method 6010B/6020A**	**One sample per 50' x 50' area of excavation (or approximate 2,500 square foot area)**
	Copper		**Bulk sampling**	**Circuit Fab excavation area**	**Perimeter of excavation / sidewall**	**US EPA method 6010B/6020A**	**One sample per 100 linear feet of perimeter length**
Subsurface Soil	**None**						

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 6 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Groundwater	**None**						
Surface water	**None**						
Sediment	**None**						
Air	**None**						
Other Media (specify)							

Explain the reasons for the above-listed sampling plan. Discuss statistical or geostatistical methodology(ies) which will be applied, if any, in the data collection process. Discuss any assumptions made in the statistical/geostatistical assessment, and how they will be met.

Excavated areas will initially be screened using a portable XRF meter to identify areas potentially requiring additional excavation (lead-affected PCLE zones). Following excavation, confirmation samples will be collected and analyzed for lead and cadmium, or copper in the copper-affected PCLE zone, to ensure the response action objectives have been met. Confirmation samples will be collected within each 2,500 square foot area from the base of each excavation and every 100 feet along the perimeter/sidewall of each excavation. As these sample locations will be variable depending on the size of the excavation, Attachment 4A is not included.

6 Implementation Schedule

Implementation Schedule	RAP Worksheet 6.0 Page 1 of 1	
	ID No.: 2541	Report Date: April 1, 2014

Document the proposed schedule for implementing the response action. Include all major response action activities through the life of the project, including all removal, decontamination, and control actions, component installations, O&M, monitoring, and post-response action care activities.

Implementation of Response Action (specify component or action)	Start	Finish	Duration
Surface soil Response Action (excavation)	**Within 30days of RAP approval**	**Approximately 60 days after initiating response**	**Approximately 60 days**

List the proposed schedule for report submittals. Add additional lines if more reports than listed will be needed to complete the response action.

Reports	Submittal date
Response Action Effectiveness Report (RAER)	**Not Applicable**
RAER submittal number 1	**Not Applicable**
RAER submittal number 2	**Not Applicable**
RAER submittal number 3	**Not Applicable**
Subsequent RAER submittals	**Not Applicable**
Response Action Completion Report (RACR) (soils only)	**Within 90 days of completion of the response action**
Post-Response Action Care Report (PRACR)	**Not Applicable**
PRACR submittal number 1	**Not Applicable**
PRACR submittal number 2	**Not Applicable**
PRACR submittal number 3	**Not Applicable**

APPENDIX 1

APPENDIX 1

References

APPENDIX 1

REFERENCES

Pastor, Behling & Wheeler, LLC. (PBW), 2013a. Affected Property Assessment Report, Undeveloped Buffer Property, Exide Frisco Recycling Center, Frisco, Texas. July 2013.

Southwest Geoscience, 2013. Phase 1 Environmental Site Assessment, J Parcel Near the Intersection of Eagan Drive and 5th Street, Frisco, Collin County, Texas, February 26, 2013.

Texas Commission on Environmental Quality (TCEQ), 2008. *Application of Remedy Standards A & B*, TRRP Guidance Document TRRP-28.

Texas Commission on Environmental Quality (TCEQ), 20013. *Soil and Groundwater Response Objectives*, TRRP Guidance Document TRRP-29.

APPENDIX 2

APPENDIX 2

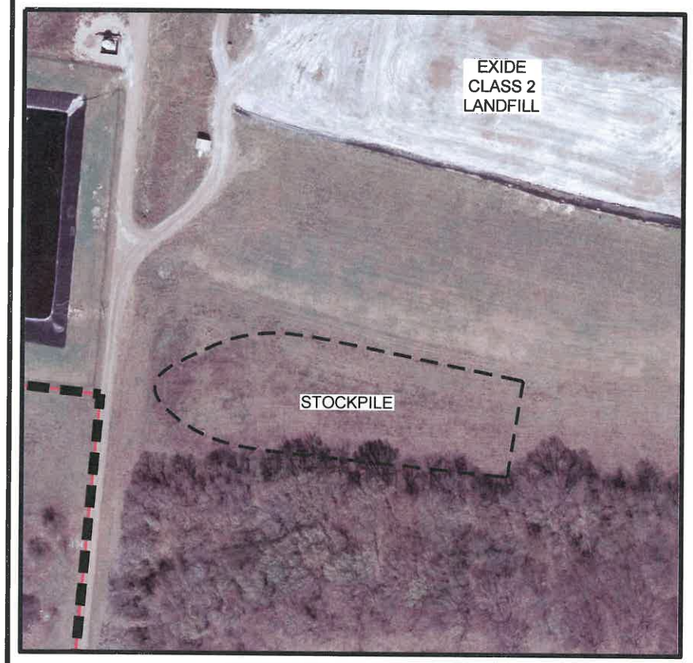
Data Tables

TABLE A2-1
SOIL SAMPLING RESULTS: TCLP ANALYSES
Response Action Plan

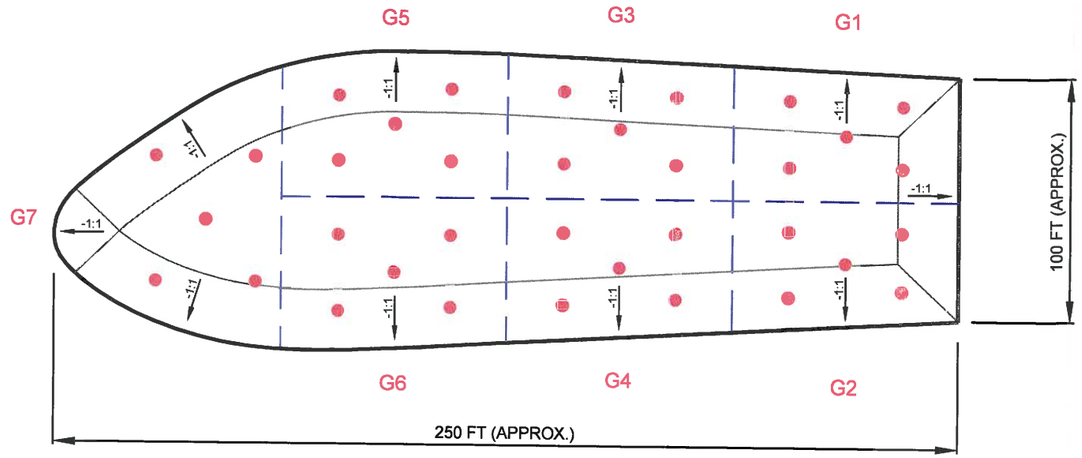
Exide Undeveloped Buffer Property VCP Investigation
Frisco, Texas

Sample ID	Sample Date	Sample Depth (ft)	Lead (mg/kg)	TCLP Lead (mg/l)	Cadmium (mg/kg)	TCLP Cadmium (mg/l)
O-15	3/28/2012	0 - 0.25	5180	4.4	28.6	NA
BC-8	3/18/2013	0 - 0.25	281	0.087	1.49	NA
L-16A1	3/19/2013	0 - 0.25	5180	1.3	17.9	NA
L-16A2	3/19/2013	0 - 0.25	2770	0.041	22.3	NA
OP-12	3/19/2013	0 - 0.25	341	0.076	1.99	NA
HI-7	3/20/2013	0 - 0.25	372	0.077	21.7	NA
HI-6	3/20/2013	0 - 0.25	472	0.074	3.72	NA
M-16A3	3/22/2013	0 - 0.25	9640	9.1	19.4	NA
M-16A1	3/22/2013	0 - 0.25	5000	11.2	20.6	0.15
TP-7	4/15/2013	1	1010	0.6	0.411JL	NA
HI-15	5/7/2013	1 - 2	1030	0.61	2.02	NA

Notes:
1. TCLP data provided by Southwest Geoscience.



STOCKPILE LOCATION

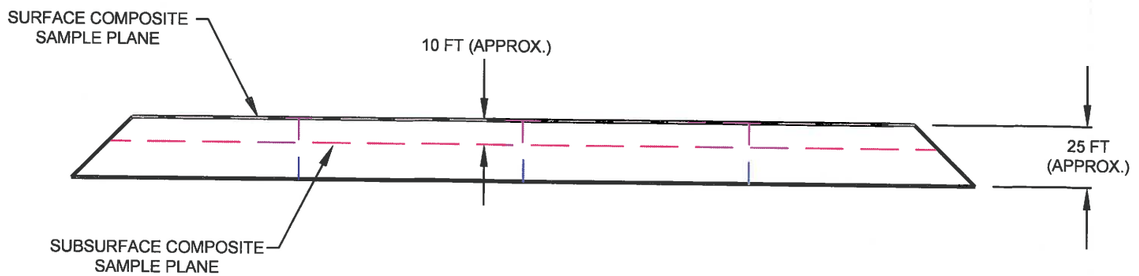


PLAN VIEW
NTS

SAMPLE RESULTS

Sample ID	Date	Cadmium (mg/Kg)	Lead (mg/Kg)
SP-G1 (1')	1/4/2013	0.140J	20.7
SP-G1 (10')	1/4/2013	<0.051	13.5
SP-G2 (1')	1/4/2013	0.126J	30.3
SP-G2 (10')	1/4/2013	0.108J	15.5
SP-G3 (1')	1/4/2013	0.0565J	14.1
SP-G3 (10')	1/4/2013	0.0946J	22.7
SP-G4 (1')	1/4/2013	<0.055	9.64
SP-G4 (10')	1/4/2013	<0.059	10.6
SP-G5 (1')	1/4/2013	<0.052	11.4
SP-G5 (10')	1/4/2013	<0.055	11.2
SP-G6 (1')	1/4/2013	0.0635J	15.9
SP-G6 (10')	1/4/2013	<0.055	11.2
SP-G7 (1')	1/4/2013	<0.052	13.2
SP-G7 (10')	1/4/2013	0.104J	14.6

J - Analyte detected between MDL and RL
< - Sample not detected above the MDL

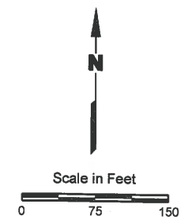


CROSS SECTION
NTS

EXPLANATION

- Sample Grid Line
- Sample Planes
- Composite Sample Location

NOTES:
1. 0-1' and 10'-12' samples were collected as five-part composite samples.
2. Stockpile is comprised of native soil excavated for landfill expansion.
3. Composite samples were collected for analysis to ensure data were representative of entire stockpile.



Source of photo:
Imagery from NCTCOG, 2009 photography.

EXIDE TECHNOLOGIES

UNDEVELOPED BUFFER PROPERTY
RESPONSE ACTION PLAN
FRISCO, TEXAS

Figure A1

BACKFILL STOCKPILE INFORMATION

PROJECT: 1824	BY: AJD	REVISIONS
DATE: APRIL, 2014	CHECKED: TNN	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Data Usability Summary
Exide Recycling Center Landfill Expansion
January 4, 2013 Soil Stockpile Sampling Event
ALS Environmental DATA PACKAGE 1301160

Pastor, Behling & Wheeler, LLC reviewed one data package from ALS Environmental for the analysis of the landfill expansion soil stockpile samples collected January 4, 2013 at the Exide Recycling Center facility, in Frisco, Texas. Data were reviewed for conformance to the requirements of the guidance document, *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13) and adherence to project objectives. At the time the laboratory data were generated for the project, ALS Environmental was NELAC-accredited under the Texas Laboratory Accreditation Program for the matrices, analytes and methods of analysis requested on the chain-of-custody documentation.

Intended Use of Data: To provide current data on concentrations of cadmium and lead in the soil excavated and stockpiled from the area of the landfill expansion.

Analyses requested included:

- Method SW6020 – Cadmium and Lead

Data were reviewed as described in *Review and Reporting of COC Concentration Data,* (RG-366/TRRP-13) and the results of the review are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- the field notes with respect to field instrument calibrations, filtering procedures, sampling procedures preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the laboratory report in the Exception Reports and case narrative, all of which were included in this review. A Laboratory Review Checklist (LRC) was not requested.

Introduction

Fourteen (14) soil samples were collected and analyzed for cadmium and lead. Table B-1 lists the sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project QA/QC objectives were established as the laboratory control limits for each analysis.

DATA REVIEW / VALIDATION RESULTS

Analytical Results

Qualified sample data for the contaminants of concern at the site are listed in Table B-2. Non-detected results (ND) are reported as less than the value of the method detection limit (MDL). Several analytes

were detected between the MDL and the reporting limit (RL) and were qualified with a "J-flag" to denote that the reported values were considered to be estimated.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). Samples were received in appropriate containers in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4±2°C. Samples were preserved in the field as specified in SW-846 Table 2-40(B). Samples were prepared and analyzed within holding times as specified in SW-846 Table and 2-40(B).

Calibrations

Calibration data was not supplied in the laboratory report.

Blanks

The method blank was adequately prepared and results were reported as non-detected (ND).

Surrogate Recoveries

Surrogate recoveries were not run.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within laboratory QC acceptance limits for both analytes.

Matrix Spike/Matrix Spike Duplicates

MS/MSD precision and accuracy results were within the project-defined QC acceptance criteria for cadmium and lead.

Field Precision

Field duplicate samples were not collected. Laboratory run duplicates had RPD results within the laboratory-defined acceptance criteria.

Field Procedures

Samples were collected using documented SOPs.

SUMMARY

The analytical data are usable for the purpose of determining current COC concentrations in the stockpiled soil at the landfill extension.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
SP-G1(1')	1301160-01
SP-G1 (10')	1301160-02
SP-G2 (1')	1301160-03
SP-G2 (10')	1301160-04
SP-G3 (1')	1301160-05
SP-G3 (10')	1301160-06
SP-G4 (1')	1301160-07
SP-G4 (10')	1301160-08
SP-G6 (1')	1301160-09
SP-G6 (10')	1301160-10
SP-G5 (1')	1301160-11
SP-G5 (10')	1301160-12
SP-G7 (1')	1301160-13
SP-G7 (10')	1301160-14

Table B-2. Qualified Analytical Data

Field Identification	Analyte	Qualification	Reason for Qualification
SP-G1(1')	Cadmium	J	Analyte detected between MDL and RL
SP-G2 (1')	Cadmium	J	Analyte detected between MDL and RL
SP-G2 (10')	Cadmium	J	Analyte detected between MDL and RL
SP-G3 (1')	Cadmium	J	Analyte detected between MDL and RL
SP-G3 (10')	Cadmium	J	Analyte detected between MDL and RL
SP-G6 (1')	Cadmium	J	Analyte detected between MDL and RL
SP-G7 (10')	Cadmium	J	Analyte detected between MDL and RL

Prepared by: Kate McCarthy, PG Date: January 28, 2013

ALS Environmental

12-Feb-2013

Vanessa Coleman
Exide Technologies
7471 South Fifth Street
Frisco, TX 75034

Tel: (972) 335-2121
Fax:

Re: LF Expansion

Work Order: **1301160**

Dear Vanessa,

ALS Environmental received 14 samples on 05-Jan-2013 09:40 AM for the analyses presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

The total number of pages in this revised report is 34.

Regards,

Electronically approved by: Luke F. Hernandez

Bernadette A. Fini
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: TX: T104704231-12-10

ALS Environmental **Date:** *12-Feb-13*

Client:	Exide Technologies
Project:	LF Expansion
Work Order:	1301160

TRRP Laboratory Data Package Cover Page

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Exide Technologies
Project:	LF Expansion
Work Order:	1301160

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Bernadette A. Fini

Bernadette A. Fini
Project Manager

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 2/12/2013					
Project Name: LF Expansion			Laboratory Job Number: 1301160					
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 67003, R140945					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	Chain-of-custody (C-O-C)						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	Sample and quality control (QC) identification						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	Test reports						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?	X					
		Were % moisture (or solids) reported for all soil and sediment samples?	X					
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	Surrogate recovery data						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X					
R5	OI	Test reports/summary forms for blank samples						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	Laboratory control samples (LCS):						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X					
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	Analytical duplicate data						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	Method quantitation limits (MQLs):						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	Other problems/anomalies						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 2/12/2013					
Project Name: LF Expansion			Laboratory Job Number: 1301160					
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 67003, R140945					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?	X					
		Were percent RSDs or correlation coefficient criteria met?	X					
		Was the number of standards recommended in the method used for all analytes?	X					
		Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		Are ICAL data available for all instruments used?	X					
		Has the initial calibration curve been verified using an appropriate second source standard?	X					
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**						
		Was the CCV analyzed at the method-required frequency?	X					
		Were percent differences for each analyte within the method-required QC limits?	X					
		Was the ICAL curve verified for each analyte?	X					
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X					
S3	O	**Mass spectral tuning:**						
		Was the appropriate compound for the method used for tuning?	X					
		Were ion abundance data within the method-required QC limits?	X					
S4	O	**Internal standards (IS):**						
		Were IS area counts and retention times within the method-required QC limits?	X					
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X					
		Were data associated with manual integrations flagged on the raw data?	X					
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?			X			
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X			
S8	I	**Interference Check Sample (ICS) results:**						
		Were percent recoveries within method QC limits?	X					
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X					
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?	X					
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					
S11	OI	**Proficiency test reports:**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X					
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X					
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?	X					
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X					
		Is documentation of the analyst's competency up-to-date and on file?	X					
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)						
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X					
S16	OI	**Laboratory standard operating procedures (SOPs):**						
		Are laboratory SOPs current and on file for each method performed?	X					

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Reportable Data	
Laboratory Name: ALS Laboratory Group	LRC Date: 2/12/2013
Project Name: LF Expansion	Laboratory Job Number: 1301160
Reviewer Name: Bernadette Fini	Prep Batch Number(s): 67003, R140945

ER#[5]	Description
	No exceptions.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Exide Technologies
Project: LF Expansion
Work Order: 1301160

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1301160-01	SP-G1(1')	Soil		1/4/2013 10:00	1/5/2013 09:40	
1301160-02	SP-G1 (10')	Soil		1/4/2013 10:05	1/5/2013 09:40	
1301160-03	SP-G2 (1')	Soil		1/4/2013 10:10	1/5/2013 09:40	
1301160-04	SP-G2 (10')	Soil		1/4/2013 10:15	1/5/2013 09:40	
1301160-05	SP-G3 (1')	Soil		1/4/2013 10:20	1/5/2013 09:40	
1301160-06	SP-G3 (10')	Soil		1/4/2013 10:23	1/5/2013 09:40	
1301160-07	SP-G4 (1')	Soil		1/4/2013 10:25	1/5/2013 09:40	
1301160-08	SP-G4 (10')	Soil		1/4/2013 10:30	1/5/2013 09:40	
1301160-09	SP-G6 (1')	Soil		1/4/2013 10:55	1/5/2013 09:40	
1301160-10	SP-G6 (10')	Soil		1/4/2013 11:00	1/5/2013 09:40	
1301160-11	SP-G5 (1')	Soil		1/4/2013 11:05	1/5/2013 09:40	
1301160-12	SP-G5 (10')	Soil		1/4/2013 11:10	1/5/2013 09:40	
1301160-13	SP-G7 (1')	Soil		1/4/2013 11:15	1/5/2013 09:40	
1301160-14	SP-G7 (10')	Soil		1/4/2013 11:20	1/5/2013 09:40	

Client:	Exide Technologies
Project:	LF Expansion
Work Order:	1301160

Case Narrative

On February 12, 2013 this report was revised to include TRRP headers with LRC.

LS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G1(1')
Collection Date: 1/4/2013 10:00 AM

Work Order: 1301160
Lab ID: 1301160-01
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.140	J	0.055	0.549	mg/Kg-dry	1	1/8/2013 20:20
Lead	20.7		0.055	0.549	mg/Kg-dry	1	1/8/2013 20:20
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	13.0		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G1 (10')
Collection Date: 1/4/2013 10:05 AM

Work Order: 1301160
Lab ID: 1301160-02
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: **SW6020**			Prep: SW3050A / 1/8/13		Analyst: **JCJ**
Cadmium	U		0.051	0.507	mg/Kg-dry	1	1/8/2013 20:23
Lead	**13.5**		**0.051**	**0.507**	**mg/Kg-dry**	1	1/8/2013 20:23
MOISTURE		Method: **SW3550**					Analyst: **KAH**
Percent Moisture	**15.9**		**0.010**	**0.0100**	**wt%**	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

LS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G2 (1')
Collection Date: 1/4/2013 10:10 AM

Work Order: 1301160
Lab ID: 1301160-03
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.126	J	0.055	0.548	mg/Kg-dry	1	1/8/2013 20:25
Lead	30.3		0.055	0.548	mg/Kg-dry	1	1/8/2013 20:25
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	15.4		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G2 (10')
Collection Date: 1/4/2013 10:15 AM

Work Order: 1301160
Lab ID: 1301160-04
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.108	J	0.050	0.495	mg/Kg-dry	1	1/8/2013 20:32
Lead	15.5		0.050	0.495	mg/Kg-dry	1	1/8/2013 20:32
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	16.3		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

LS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G3 (1')
Collection Date: 1/4/2013 10:20 AM

Work Order: 1301160
Lab ID: 1301160-05
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.0565	J	0.054	0.538	mg/Kg-dry	1	1/8/2013 20:35
Lead	14.1		0.054	0.538	mg/Kg-dry	1	1/8/2013 20:35
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	15.6		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G3 (10')
Collection Date: 1/4/2013 10:23 AM

Work Order: 1301160
Lab ID: 1301160-06
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
Cadmium	0.0946	J	0.058	0.583	mg/Kg-dry	1	1/8/2013 20:37
Lead	22.7		0.058	0.583	mg/Kg-dry	1	1/8/2013 20:37
MOISTURE		Method: SW3550					Analyst: KAH
Percent Moisture	18.2		0.010	0.0100	wt%	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Feb-13*

Client: Exide Technologies
Project: LF Expansion
Sample ID: SP-G4 (1')
Collection Date: 1/4/2013 10:25 AM

Work Order: 1301160
Lab ID: 1301160-07
Matrix: SOIL

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
METALS		Method: **SW6020**			Prep: SW3050A / 1/8/13		Analyst: **JCJ**
Cadmium	U		0.055	0.552	mg/Kg-dry	1	1/8/2013 20:40
Lead	**9.64**		**0.055**	**0.552**	**mg/Kg-dry**	1	1/8/2013 20:40
MOISTURE		Method: **SW3550**					Analyst: **KAH**
Percent Moisture	**16.2**		**0.010**	**0.0100**	**wt%**	1	1/8/2013 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

LS Environmental

Date: *12-Feb-13*

ent: Exide Technologies
)ject: LF Expansion
nple ID: SP-G7 (10')
llection Date: 1/4/2013 11:20 AM

Work Order: 1301160
Lab ID: 1301160-14
Matrix: SOIL

alyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
TALS		Method: SW6020			Prep: SW3050A / 1/8/13		Analyst: JCJ
admium	0.104	J	0.054	0.539	mg/Kg-dry	1	1/8/2013 21:01
ead	14.6		0.054	0.539	mg/Kg-dry	1	1/8/2013 21:01
)ISTURE		Method: SW3550					Analyst: KAH
ercent Moisture	16.2		0.010	0.0100	wt%	1	1/8/2013 16:30

ote: See Qualifiers Page for a list of qualifiers and their explanation.

Work Order: 1301160
Client: Exide Technologies
Project: LF Expansion

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 67003	**Test Name:** Metals					
1301160-01A	SP-G1(1')	Soil	1/4/2013 10:00:00 AM		1/8/2013 11:00 AM	1/8/2013 08:20 PM
1301160-02A	SP-G1 (10')		1/4/2013 10:05:00 AM		1/8/2013 11:00 AM	1/8/2013 08:23 PM
1301160-03A	SP-G2 (1')		1/4/2013 10:10:00 AM		1/8/2013 11:00 AM	1/8/2013 08:25 PM
1301160-04A	SP-G2 (10')		1/4/2013 10:15:00 AM		1/8/2013 11:00 AM	1/8/2013 08:32 PM
1301160-05A	SP-G3 (1')		1/4/2013 10:20:00 AM		1/8/2013 11:00 AM	1/8/2013 08:35 PM
1301160-06A	SP-G3 (10')		1/4/2013 10:23:00 AM		1/8/2013 11:00 AM	1/8/2013 08:37 PM
1301160-07A	SP-G4 (1')		1/4/2013 10:25:00 AM		1/8/2013 11:00 AM	1/8/2013 08:40 PM
1301160-08A	SP-G4 (10')		1/4/2013 10:30:00 AM		1/8/2013 11:00 AM	1/8/2013 08:42 PM
1301160-09A	SP-G6 (1')		1/4/2013 10:55:00 AM		1/8/2013 11:00 AM	1/8/2013 08:44 PM
1301160-10A	SP-G6 (10')		1/4/2013 11:00:00 AM		1/8/2013 11:00 AM	1/8/2013 08:47 PM
1301160-11A	SP-G5 (1')		1/4/2013 11:05:00 AM		1/8/2013 11:00 AM	1/8/2013 08:49 PM
1301160-12A	SP-G5 (10')		1/4/2013 11:10:00 AM		1/8/2013 11:00 AM	1/8/2013 08:52 PM
1301160-13A	SP-G7 (1')		1/4/2013 11:15:00 AM		1/8/2013 11:00 AM	1/8/2013 08:54 PM
1301160-14A	SP-G7 (10')		1/4/2013 11:20:00 AM		1/8/2013 11:00 AM	1/8/2013 09:01 PM

ALS Environmental

Work Order: 1301160
Client: Exide Technologies
Project: LF Expansion

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R140945 **Test Name:** Moisture						
1301160-01A	SP-G1(1')	Soil	1/4/2013 10:00:00 AM			1/8/2013 04:30 PM
1301160-02A	SP-G1 (10')		1/4/2013 10:05:00 AM			1/8/2013 04:30 PM
1301160-03A	SP-G2 (1')		1/4/2013 10:10:00 AM			1/8/2013 04:30 PM
1301160-04A	SP-G2 (10')		1/4/2013 10:15:00 AM			1/8/2013 04:30 PM
1301160-05A	SP-G3 (1')		1/4/2013 10:20:00 AM			1/8/2013 04:30 PM
1301160-06A	SP-G3 (10')		1/4/2013 10:23:00 AM			1/8/2013 04:30 PM
1301160-07A	SP-G4 (1')		1/4/2013 10:25:00 AM			1/8/2013 04:30 PM
1301160-08A	SP-G4 (10')		1/4/2013 10:30:00 AM			1/8/2013 04:30 PM
1301160-09A	SP-G6 (1')		1/4/2013 10:55:00 AM			1/8/2013 04:30 PM
1301160-10A	SP-G6 (10')		1/4/2013 11:00:00 AM			1/8/2013 04:30 PM
1301160-11A	SP-G5 (1')		1/4/2013 11:05:00 AM			1/8/2013 04:30 PM
1301160-12A	SP-G5 (10')		1/4/2013 11:10:00 AM			1/8/2013 04:30 PM
1301160-13A	SP-G7 (1')		1/4/2013 11:15:00 AM			1/8/2013 04:30 PM
1301160-14A	SP-G7 (10')		1/4/2013 11:20:00 AM			1/8/2013 04:30 PM

WorkOrder: 1301160
InstrumentID: Balance1
Test Code: MOIST_SW3550
Test Number: SW3550
Test Name: Moisture

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** wt%

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Percent Moisture	MOIST	0	0.010	0.010

METHOD DETECTION / REPORTING LIMITS

WorkOrder: 1301160
InstrumentID: ICPMS05
Test Code: ICP_S_Low
Test Number: SW6020
Test Name: Metals

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Cadmium	7440-43-9	0.081	0.050	0.50
A	Lead	7439-92-1	0.21	0.050	0.50

Batch ID: **67003** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-010813-67003** Units: **mg/Kg** Analysis Date: **1/8/2013 07:47 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077552** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	U	0.50								
Lead	U	0.50								

LCS Sample ID: **MLCSS1-010813-67003** Units: **mg/Kg** Analysis Date: **1/8/2013 07:49 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077553** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	8.699	0.50	10	0	87	80-120	0			
Lead	8.76	0.50	10	0	87.6	80-120	0			

MS Sample ID: **1301113-01BMS** Units: **mg/Kg** Analysis Date: **1/8/2013 08:03 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077559** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
.nium	6.479	0.41	8.131	0.2344	76.8	75-125	0			
Lead	19.19	0.41	8.131	10.26	110	75-125	0			

MSD Sample ID: **1301113-01BMSD** Units: **mg/Kg** Analysis Date: **1/9/2013 02:13 PM**

Client ID: Run ID: **ICPMS05_130109A** SeqNo: **3078203** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	6.775	0.43	8.666	0.2344	75.5	75-125	6.479	4.47	25	
Lead	20.49	0.43	8.666	10.26	118	75-125	19.19	6.53	25	

DUP Sample ID: **1301113-01BDUP** Units: **mg/Kg** Analysis Date: **1/8/2013 07:54 PM**

Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077555** Prep Date: **1/8/2013** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	0.2225	0.42	0	0	0	0-0	0.2344	0	25	J
Lead	10.83	0.42	0	0	0	0-0	10.26	5.44	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Exide Technologies
Work Order: 1301160
Project: LF Expansion

QC BATCH REPORT

Batch ID: **67003** Instrument ID **ICPMS05** Method: **SW6020**

PDS Sample ID: **1301113-01BBS** Units: **mg/Kg** Analysis Date: **1/8/2013 08:08 PM**
Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077561** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cadmium	7.278	0.41	8.252	0.2344	85.3	75-125	0			
Lead	17.42	0.41	8.252	10.26	86.7	75-125	0			

SD Sample ID: **1301113-01B DIL SX** Units: **mg/Kg** Analysis Date: **1/8/2013 07:56 PM**
Client ID: Run ID: **ICPMS05_130108A** SeqNo: **3077556** Prep Date: DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Cadmium	U	2.1	0	0	0	0-0	0.2344	0	10	
Lead	10.89	2.1	0	0	0	0-0	10.26	6.12	10	

The following samples were analyzed in this batch:

1301160-01A	1301160-02A	1301160-03A
1301160-04A	1301160-05A	1301160-06A
1301160-07A	1301160-08A	1301160-09A
1301160-10A	1301160-11A	1301160-12A
1301160-13A	1301160-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Exide Technologies
Work Order: 1301160
Project: LF Expansion

QC BATCH REPORT

L . ID: **R140945** Instrument ID **Balance1** Method: **SW3550** **(Dissolve)**

DUP Sample ID: **1301160-14ADUP** Units: **wt%** Analysis Date: **1/8/2013 04:30 PM**

Client ID: **SP-G7 (10')** Run ID: **BALANCE1_130108C** SeqNo: **3077749** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.15	0.010	0	0	0	0-0	16.19	6.62	20	

The following samples were analyzed in this batch:

1301160-01A	1301160-02A	1301160-03A
1301160-04A	1301160-05A	1301160-06A
1301160-07A	1301160-08A	1301160-09A
1301160-10A	1301160-11A	1301160-12A
1301160-13A	1301160-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Client: Exide Technologies
Project: LF Expansion
WorkOrder: 1301160

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
wt%	

ALS Environmental

Sample Receipt Checklist

ent Name: **EXIDE TECHNOLOGIES** Date/Time Received: **05-Jan-13 09:40**

Work Order: **1301160** Received by: **RDH**

Checklist completed by Robert D. Harris (eSignature) 05-Jan-13 (Date) Reviewed by: Bernadette A. Fini (eSignature) 05-Jan-13 (Date)

Matrices: soils
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
ontainer/Temp Blank temperature in compliance?	Yes ☑	No ☐	
emperature(s)/Thermometer(s):	1.6c c/u	005	
Cooler(s)/Kit(s):	5124		
Date/Time sample(s) sent to storage:	1/5/13 10:10		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

SRC Page 1 of 1

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Chain of Custody Form

Page 1 of 2

COC ID: 71428

1301160

EXIDE TECHNOLOGIES: Exide Technologies

Project: LF Expansion

ALS Environmental

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	LF Expansion	A	~~TCLP Metals (SW 846) Pb & Cd~~
Work Order		Project Number		B	Total lead & Cadmium
Company Name	Exide Technologies	Bill To Company	Exide Technologies	C	
Send Report To	Vanessa Coleman	Invoice Attn	Vanessa Coleman	D	
Address	7471 South Fith Street	Address	7471 South Fith Street	E	
				F	
City/State/Zip	Frisco, TX 75034	City/State/Zip	Frisco, TX 75034	G	
Phone	(972) 335-2121	Phone	(972) 335-2121	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SP-G1(1')	11/4/13	1000	S	Neat	1		X									
2	SP-G1(10')		1005														
3	SP-G2(1')		1010														
4	SP-G2(10')		1015														
5	SP-G3(1')		1020														
6	SP-G3(10')		1023														
7	SP-G4(1')		1025														
8	SP-G4(10')		1030														
9	SP-G6(1')		1055														
10	SP-G6(10')		1100														

Sampler(s) Please Print & Sign:

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Std 10 WK Days ☐ 5 WK Days ☑ Other 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: [signature] Date: 11/4/13 Time: 1200

Received by: FedEx 8013 7714 6221

Relinquished by: Date: Time:

Received by (Laboratory): [signature] 11/5/13 0940

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: 48 Hr TAT Copy to Tim.Jennings@FaWilc.com

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any cl[illegible] must be made in writing once samples and COC Form have been submitted to ALS [illegible]nmental.
2. Unless [illegible]wise agreed in a formal contract, services provided by ALS Environmental are expres[illegible]ited to the terms and conditions stated on the reverse.
3. The Cha[illegible] of Custody is a legal document. All information must be completed accurately.

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Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
[illegible], PA +1 717 505 5280

Chain of Custody Form

2 of 2

COC ID: 66345

ALS Project Manager: | ALS Work Order #: 1501160

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Landfill Expansion	A	~~TCLP Metals (Ag/Ba/Cr) Pb & Cd~~
Work Order		Project Number		B	Total lead & Cadmium
Company Name	Exide Technologies	Bill To Company	Exide Technologies	C	
Send Report To	Vanessa Coleman	Invoice Attn	Vanessa Coleman	D	
Address	7471 South Fith Street	Address	7471 South Fith Street	E	
				F	
City/State/Zip	Frisco, TX 75034	City/State/Zip	Frisco, TX 75034	G	
Phone	(972) 335-2121	Phone	(972) 335-2121	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SP-G5(1')	1/4/13	1105	S	Neat	1		X									
2	SP-G5(10')	"	1110	"	"	"											
3	SP-G7(1')	"	1115	"	"	"											
4	SP-G7(10')	"	1120	"	"	"											
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign | Shipment Method | Required Turnaround Time: (Check Box) ☐ Std 10 WK Days ☐ 5 WK Days ☑ Other ☐ 2 WK Days ☐ 24 Hour | Results Due Date:

Relinquished by: [signature] Date: 1/4/13 Time: 12:00 Received by: Fed Ex 801377140221

Relinquished by: Date: Time: Received by (Laboratory): A.L.R. 1/5/13 0840

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 48 Hr TAT Copy to: t.m.jennings@pbwllc.com

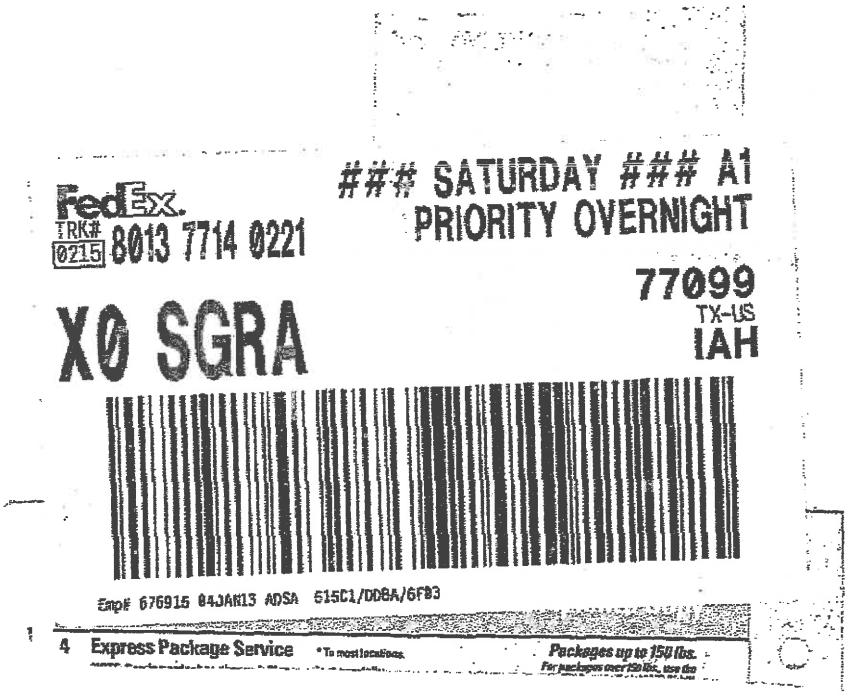
Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

1501160



ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL	Seal Signature/Initials
Date: 1/4/13 Time: 1200	Date: 1/5/13
Name: [illegible]	
Company: [illegible]	

APPENDIX 6

Perimeter Air Monitoring and Dust Control Plan

Response Action Soil Sampling and Analysis Plan

UNDEVELOPED BUFFER PROPERTY RESPONSE ACTION

PERIMETER AIR MONITORING AND DUST CONTROL PLAN

EXIDE TECHNOLOGIES
FRISCO, TEXAS

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APRIL 1, 2014

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1.0 INTRODUCTION

Pastor, Behling & Wheeler, LLC (PBW) has prepared this Perimeter Air Monitoring and Dust Control Plan (the Plan) in conjunction with Exide Technologies and Remediation Services Inc. (RSI) to identify the measures that will be taken to monitor and minimize emissions associated with response action activities at the Exide Technologies' Undeveloped Buffer Property (the Site) in Frisco, Texas. Specifically, this Plan outlines the requirements and methods for monitoring ambient air quality during planned remediation activities for particulate matter (dust), lead and cadmium, and identifies the steps that will be taken to reduce the potential for off-site impacts from dust generating activities during remediation activities. The Plan includes activity-specific dust control criteria and dust suppression procedures. Best management practices (BMPs) will be implemented throughout the project. BMPs include wetting active remediation areas, minimizing or ceasing activity during periods of high wind (greater than 20 miles per hour), wetting paved areas, wetting unpaved areas, application of dust suppressant materials as well as covering stockpiles. The Plan provides specific information about the generation and control of dust emissions during the excavation of soil, stockpiling of soil, loading of soil and other activities associated with the remediation activities.

1.1 Project Overview

The response action consists of excavating lead- or copper-affected soils, stockpiling the soil for waste characterization, and then disposal of the material. Disposal of material will consist of transporting soil to the on-site landfill (Class 2 non-hazardous waste) or authorized off-site disposal facilities (Class 2 non-hazardous waste, Class 1 non-hazardous waste, or hazardous waste). Soil excavation, soil stockpiling, soil loading, and placement of soils in the Class 2 on-site landfill are considered dust-generating activities for the purpose of this plan. Affected soils requiring remediation are found at various locations on the Site, but generally in the interior of the Exide Technologies property. The areas to be excavated comprise approximately 12 acres and represent approximately 18,000 cubic yards of soil.

Air quality monitoring will consist of ambient air monitoring using NIOSH Method 7303 to evaluate lead and cadmium concentrations in dust, and E-Bam particulate monitors to evaluate dust concentrations. Monitoring will be conducted to ensure that potential off-site impacts are mitigated. Air quality will be monitored by RSI during the remediation activities.

The primary objectives of the perimeter air monitoring are to:

- Develop a relationship between particulate (dust) levels and concentrations of lead and cadmium, so that the particulate measurements can be used as a surrogate;
- Determine if concentrations of lead and cadmium and particulate emissions are in excess of air "Take Action" or "Stop Work" levels established for the Site; and
- Ensure that engineering controls and work practices help minimize potential off-site impacts.

The monitoring plan will help ensure that RSI reacts quickly and makes appropriate changes to dust control measures as needed. Air quality will be measured and documented at air quality monitoring stations during remediation activities in accordance with this plan.

2.0 ORGANIZATION OF PLAN

This plan addresses the air monitoring to be performed during dust-generating remediation activities and describes the procedures to be used to minimize dust emissions. The air monitoring portion of the plan describes continuous perimeter monitoring for particulates (PM_{10}), explains how the relationship between particulate, lead, and cadmium will be established and describes how the "Take Action" and "Stop Work" levels will be identified and implemented for particulates. In addition, the plan describes how samples will be collected to directly measure lead and cadmium in dust and how those data will be used. The dust control procedures to be used during remediation activities are described after the air monitoring portion of the Plan.

3.0 PARTICULATE MONITORING

3.1 Equipment

Real-time particulate air monitors (e.g., E-BAM Particulate Monitor or equivalent) equipped with an omni-directional air intake device and a "PM_{10}" impactor head will be used at the Site to monitor dust levels at or near the Exide property boundaries during remediation activities that could generate dust. Real-time data from the downwind particulate monitors is evaluated in 30-minute and 60-minute averaged blocks to provide immediate comparison to "Take Action" and "Stop Work" level criteria. If there is a calm wind condition (i.e. less than 1 mile per hour wind averaged over a 30-minute period), the upwind monitor will be treated as a downwind monitor. The data collection and reporting system which utilizes data generated by this equipment is described further in Section 3.5. Appendix A provides specific information regarding the E-BAM Particulate Monitors that will be utilized during Site remediation.

3.2 Monitoring Locations

At least one upwind and three downwind monitoring locations will be established each day dust-generating activities are to be performed, and monitors will be placed to ensure adequate coverage to minimize the potential for off-site impacts to property beyond the Site and the Exide former operating plant (FOP). In the event that multiple activities are being conducted concurrently (i.e., multiple remediation areas), the downwind monitoring network will be used to monitor all activities to the extent practicable. If wind direction and remediation activity locations warrant, additional monitors may be added to ensure adequate downwind coverage. If particulate-related "Take Action" or "Stop Work" criteria are exceeded, dust mitigation procedures applicable to each activity will be implemented. RSI will utilize National Weather Service forecasts and review current conditions and recent trends from an onsite meteorological station to position the monitors each morning prior to the start of any dust-generating remediation activities. Monitor location information will be determined by GPS and recorded. Wind speed and direction will be recorded and the data sent to onsite personnel as described in Section 3.5. If there is a 90 degree change in the prevailing wind direction averaged over a 30-minute period during the work day, the downwind monitors will be appropriately relocated and dust-generating work will be suspended until the monitors resume operation.

3.3 "Take Action" and "Stop Work" Levels Using Particulates as a Surrogate for Lead and Cadmium

The 2008 National Ambient Air Quality Standards (NAAQS) standard for lead, and the Texas Effects Screening Level (ESL) for cadmium have been utilized to establish "Take Action" and "Stop Work" levels for real-time particulate monitoring that will minimize off-site migration of dust associated with the remediation activities. The lead and cadmium-based PM_{10} surrogate levels will be calculated based upon correlations derived from project monitoring data and the more stringent of the two surrogate levels (i.e., lead or cadmium) will be used to establish the ongoing "Take Action" and "Stop Work" levels for PM_{10}.

3.3.1 Establishing Particulate "Take Action" and "Stop Action" Levels for Lead

The target level for lead on a one-hour basis, TPb, has been derived from the current (2008) NAAQS for Pb, 0.15 $\mu g/m^3$, which is expressed as a three-month rolling average. The action level for lead (AL^{Pb}) derived from the NAAQS will be implemented on the basis of 30-minute and 60-minute block-averaged particulate readings. The particulate "Take Action" level notification will be based on a 30-minute downwind block average ($TAL^{PM\text{-}30}$). The particulate "Stop Work" level will be set on 30-minute ($SWL^{PM\text{-}30}$) and 60-minute ($SWL^{PM\text{-}60}$) downwind block averages.

According to Appendix D, "Averaging Period Concentration Estimates" in EPA-454/R-92-024 "Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants (Revised)" December 1992, the appropriate multiplying factor in converting one-hour averaged concentrations to three-month averages is 0.1. Therefore, to set an equivalent one-hour allowable concentration consistent with the three-month averaged Pb NAAQS, the NAAQS value of 0.15 $\mu g/m^3$ is divided by 0.1, yielding 1.5 $\mu g/m^3$ = 0.0015 mg/m^3 Pb = TPb. Until the AL^{Pb} is established as described below, the default 30-minute block average "Take Action" level for lead will be the default $TAL^{PM\text{-}30}$ of 0.1 mg/m^3, and the 30-minute block average "Stop Work" Level ($SWL^{PM\text{-}30}$) for lead will be 0.2 mg/m^3 (two times the default $TAL^{PM\text{-}30}$) value. The default 60-minute block average ($SWL^{PM\text{-}60}$) will be 0.1 mg/m^3.

The AL^{Pb} will be calculated by the following method:

The lead content fraction (FPb), taking into account downwind air sampling stations, will be determined from project-collected particulate and lead concentration data based upon the following relationship in the measured downwind particulate monitor data. Any sample results for lead which are reported from the laboratory as being below the detection limits will be entered into this calculation as ½ of the reported detection limit rather than as zero. The calculation of FPb will be completed using the data from each of the three or more downwind particulate monitor and air sampler pairs. The data from the monitor will be averaged for use in the calculation.

$\frac{\text{Pb mg/m}^3}{\text{Dust/PM}_{10}\text{ mg /m}^3}$	=	FPb (unitless)

The highest of the calculated values from the three downwind particulate monitor and air sampler pairs will be the FPb. The AL^{Pb} for the particulate monitors will then be calculated as follows:

$\frac{\text{TPb } 0.0015 \text{ mg/m}^3}{\text{FPb (unitless)}}$	=	AL^{Pb} mg/m³ (as particulates, PM_{10})

3.3.2 Establishing Particulate "Take Action" and "Stop Work" Levels for Cadmium

The Texas Commission on Environmental Quality (TCEQ) short-term Effects Screening Level for cadmium is 0.0001 mg/m³. Until the AL^{Cd} is established as described below, the default TAL^{PM-30} for cadmium will be 0.1 mg/m³, and the default SWL^{PM-30} will be 0.2 mg/m³ (two times the default TAL^{PM-30}). The default SWL^{PM-60} will be 0.1 mg/m³.

In order to derive a comparable PM_{10} "Take Action" level, the AL for cadmium based upon the content of cadmium in the measured dust (FCd) is determined from the downwind project-collected particulate and cadmium concentration data by the following equations. Any sample results for cadmium which are reported from the laboratory as being below the detection limits will be entered into this calculation as ½ of the reported detection limit rather than as zero. The calculation of FCd will be completed using the data from each of the three or more downwind particulate monitor and air sampler pairs. The data from the monitors will be averaged for use in the calculation.

$\frac{\text{Cd mg/m}^3}{\text{Dust/PM}_{10}\text{ mg /m}^3}$	=	FCd (unitless)

The highest of the calculated values from the three downwind particulate monitor and air sampler pairs will be the FCd. The AL^{Cd} for the dust monitors for the action levels described above will then be calculated as follows:

$\frac{\text{(ESL Cd 0.0001) mg/m}^3}{\text{FCd}}$	=	AL^{Cd} mg/m^3 (as particulates, PM_{10})

3.3.3 Establishing Particulate Take Action and Stop Work Levels as Surrogate

The 30-minute block average "Take Action" level (TAL^{PM-30}) and 60-minute "Stop Action" level (SWL^{PM-60}) will be the LOWER of the calculated AL^{Pb} and AL^{Cd}. In no event will the TAL^{PM-30} and the SWL^{PM-60} be greater than 0.15 mg/m^3. The 30-minute block average "Stop Action" level (SWL^{PM-30}) will be two times the TAL^{PM-30}.

3.4 "Stop Work" Level for Wind

A wind speed "Stop Work" level notification will be set on a one-minute block average using data from the on-site meteorological station. If the sustained wind speed (the wind speed obtained by averaging the measured values over a one minute period) exceeds 20 miles per hour, all active soil excavation, stockpiling, treatment and loading must cease until the sustained wind speed declines to 20 miles per hour or lower. Non-dust producing activities (equipment maintenance, sampling etc.) may still be conducted during these periods

3.5 Particulate Monitors, Wind Data Monitoring, and Notifications

3.5.1 Particulate Monitors

The data obtained from the particulate monitors will be monitored at a remote location by Field Data Solutions (FDS). FDS hosts and manages a computer based monitoring system which will provide "Take Action" and "Stop Work" level notifications to both field and management personnel on a real time basis as well as provide real time access to values from each instrument. Each of the E-BAM monitors will be equipped with a wireless modem to transmit data, and

cellular communication gateways will be installed at the site to act as central communication hubs.

3.5.2 Wind Speed and Direction Data Monitoring

Wind information (speed and direction) will be monitored using the on-site weather station and the data transmitted to FDS directly via telemetry. The wind direction data will be integrated with the FDS monitoring system to provide "Stop Work" level notifications to both field and management personnel on a real time basis as well as provide real time access to the current wind direction.

3.5.3 Notifications

Notifications of exceedances of the particulate or wind speed "Take Action" or "Stop Work" levels will be sent via text message or email to field personnel. Notifications to the field office (RSI) will be sent via email. The notifications will be sent to RSI's on-site Project Manager, Air Monitoring/Dust Control Technician, and any designated Consultant oversight personnel. The notifications will be sent as a "Take Action" level notification or a "Stop Work" level notification. The Dust Control Technician will be the primary individual responsible for monitoring the notifications and ordering implementation of dust mitigation procedures. However, all of these individuals will have the authority to order implementation of dust mitigation procedures, if needed.

3.5.4 Stop Work Criteria for Monitors

If the signal from either the downwind particulate monitors or the onsite weather system is lost for five minutes or more, all dust-generating activities will be suspended until the downwind particulate monitors and the on-site weather system are operational and the signal to the FDS system is re-established.

3.6 Dust Suppression Measures

3.6.1 Particulate "Take Action" Levels

If the 30-minute average PM_{10} concentration at a downwind monitor exceeds the "Take Action" level (TAL^{PM-30}) provided in Table 1, RSI will immediately implement increased dust suppression activities as described in Section 6.

3.6.2 Particulate "Stop Work" Levels

If the one-hour (60-minute) average or thirty-minute (30-minute) average PM_{10} concentration at a downwind monitor exceeds the applicable "Stop Work" level presented in Table 1, RSI will immediately stop all facility dust generating activities. During the work stoppage period (minimum 15 minutes), RSI must make dust suppression adjustments to reduce airborne particulate matter concentrations below the "Take Action" level concentration for particulates. The dust suppression adjustments are described in Section 6.

After dust suppression adjustments have been implemented (minimum 15-minute period), work may resume. After the dust suppression activities have been revised and work has resumed, the air monitoring technician will continuously monitor the dust levels for a 30-minute period utilizing the available real time data to ensure the dust suppression adjustments are effective. Adjustments to dust suppression activities will be made if needed. If particulate concentration "Stop Work" levels for the same averaging period are exceeded at a downwind particulate monitor twice in one work day, RSI must immediately stop work for the remainder of that work day and design and implement a more effective dust control program prior to resuming work the following work day. During this period, equipment maintenance, decontamination, sampling and other non dust-producing activities may be performed.

3.6.3 Visible Dust

If visible dust is present in the excavation area, increased wetting of the area using water trucks and spray misters will be implemented. If visible dust is observed leaving the active excavation area, work will stop until additional dust control measures are implemented as described in Section 6.

4.0 PERIMETER AIR SAMPLES COLLECTED FOR LABORATORY ANALYSES

4.1 Metals Analyses

Air samples will be collected upwind and downwind at the same location as the E-BAM monitors for laboratory analysis of both lead and cadmium during remediation activities using a low volume particulate air sampler. This analytical data will be correlated with the real-time particulate concentration data collected by the E-BAM monitors on a weekly basis, provided validated sampling results are received in a timely manner, and at a minimum every two weeks. Two weeks of analytical data will be correlated with the corresponding real-time particulate concentration data collected by the E-BAM monitors to establish a two-week rolling average. The lowest correlated particulate "Take Action" level for cadmium or lead calculated from the averaged data from each of the three downwind particulate monitor and air sampler pairs will be utilized for the dust monitors TAL^{PM-30} and SWL^{PM-60} until the next correlation is performed.

Air samples for these metals analysis will be collected by RSI at least three times per week during active excavation activities. Samples will not be collected on days when excavation or soil loading activities are not occurring.

Air samples for metals analysis will be collected over a full working shift (typically eight – ten hours) using a Gilian Model GilAir5 air sampling pump or equivalent. The intakes of the filter cassettes are positioned adjacent to the inlet of the co-located E-BAM air inlet. The inlet port of the filter is in a downward position. The air sampling interval may be less than eight hours in the event of inclement weather during the air sampling period (such as severe thunderstorms). Air samples will be collected by attaching laboratory-provided air sample filter cartridges (0.8-micrometer mixed cellulose ester membrane filter cartridge) to the pump, and setting the air sample filter cartridges approximately five feet above ground level at the E-BAM monitor locations, which are at or near the property lines both upwind and downwind. When the downwind air samplers are relocated with the E-BAM monitors due to a 90 degree change in the prevailing wind direction, averaged over a 30-minute period, the air samplers will be shut off during the relocation and started in the new location without a filter change. The air sample pumps will be set at a flow rate of approximately three to four liters per minute, thereby resulting in an air sample volume of approximately 1800 - 2400 liters per air sample.

Following air sample collection, the air sample cartridges/tubes will be securely capped, labeled, and delivered with chain of custody documentation to ALS Laboratory Group, in Salt Lake City, Utah for analysis of lead and cadmium. ALS is accredited by the TCEQ for analysis of environmental samples and is accredited by the American Industrial Hygiene Association (AIHA) for analysis of air samples and lead in soil, dust, paint and air. Laboratory analyses will be performed on an expedited 24-hour turnaround if possible. Metals will be analyzed using NIOSH Method 7303 (see Appendix B). This method is specifically accredited by the AIHA.

Laboratory data will be validated by Exide's consultant and provided to the TCEQ within two business days of receipt of validated analytical results, excluding the day that the results are received. If data are received that cannot be validated, an e-mail notification will be provided to the TCEQ within two business days with a brief description of the issue(s). Upon receipt of the corrected data from the laboratory, Exide's consultant will validate and provide to TCEQ as described above.

4.2 Metals Concentrations "Take Action" Levels

Following receipt of the lead and cadmium analytical laboratory reports, the analytical data from the downwind air samplers will be compared to the site-specific lead and cadmium "Take Action" levels provided on Table 1. The "Take Action" levels for the lead and cadmium sample results are set at 75% of the "Stop Work" levels (see Section 4.3). If either concentration in the downwind samples exceeds the applicable "Take Action" level, the RSI will immediately implement increased dust suppression activities as described in Section 6.

4.3 Metals Concentrations Stop Work Levels

Following receipt of the lead and cadmium analytical laboratory reports, the analytical data from the downwind air samplers will be compared to the "Stop Work" levels shown on Table 1. The "Stop Work" limit for lead has been derived from the current (2008) NAAQS for Pb, adjusted as appropriate to address the differences in averaging periods. According to Appendix D "Averaging Period Concentration Estimates" in EPA-454/R-92-024 "Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants (Revised)" December 1992, the appropriate multiplying factor in converting eight-hour averaged concentrations to three-month averages is 0.14. Accordingly, the NAAQS value of 0.15 $\mu g/m^3$ is divided by 0.14, yielding

1.07 $\mu g/m^3$ average concentrations as the lead "Stop Work" level. For cadmium, the TCEQ short term ESL of 0.1 $\mu g/m^3$ average concentration is the "Stop Work" level.

If the lead or cadmium "Stop Work" levels are exceeded by results from a downwind air sampler, RSI will immediately stop all excavation and soil handling activities and design and implement a more effective dust control program prior to resuming work. The additional dust suppression activities are described in Section 6.

Table 1 provides the default action levels and responses for particulates, lead, and cadmium. When sufficient site data has been collected following the start of the remediation activities, the action and stop work levels for particulates will be updated based upon the relationship of particulate concentration and lead and cadmium concentrations utilizing the formulas in Section 3.3.1 and 3.3.2, respectively. Take Action and Stop Work levels will be updated weekly, provided timely sampling results are received, and at least every two weeks based upon the relationship between dust and measured metals concentrations.

Table 1. Action Levels and Response

Contaminant of Concern	Monitoring Method	Frequency of Monitoring	Take Action Level (Increase Dust Suppression)	Stop Work Level
Particulate Matter	Visual		Visible dust within the active excavation area – Implement additional dust control measures.	Dust leaving the excavation area perimeter – Stop Work. Implement additional dust control measures.
	PM_{10} Downwind Particulate Monitors	30-minute block average	$PM_{10} > TAL^{PM-30}$ Default $TAL^{PM-30} = 0.10$ mg/m³ average 30-minute concentration – Implement additional dust control measures.	$PM_{10} > SWL^{PM-30}$ Default SWL^{PM-30} 0.20 mg/m³ (or, two times default TAL^{PM-30}) average 30-minute concentration – Stop Work. Implement additional dust control measures.
	PM_{10} Downwind Particulate Monitors	60-minute block average		$PM_{10} > SWL^{PM-60}$ Default SWL^{PM-60} = 0.10 mg/m³ average hourly concentration – Stop Work. Implement additional dust control measures.
Lead	Low Volume Particulate Samplers	Three days per week	Take action level = 0.8 µg/m³ – Implement additional dust control measures.	Stop Work = 1.07 µg/m³ average concentration.
Cadmium	Low Volume Particulate Samplers	Three days per week	Take Action level = 0.075 µg/m³ – Implement additional dust control measures.	Stop Work = 0.100 µg/m³ average concentration (TCEQ short term Cd ESL).

5.0 DUST CONTROL

Control of dust will be a high priority during remediation activities. The main mechanism for dust control method during remediation activities will be the application of water using fine water mist to the area being actively excavated using a water truck with spray hoses. A water truck and a dust control technician will be assigned to each excavation team. Soil excavation will not proceed unless the water truck and technician are available for use. In addition, one or more large area misters (e.g., Dust Boss DB 60 with oscillation or equivalent equipment) will be available as an additional dust suppression device to be used when the direct application of water to the area being excavated using the water truck and dust control technician is ineffective. The airborne dust wet suppression system resembles a snow making machine and can cover a large area (approximately ½-acre per machine) with a fine mist of water, effectively controlling dust. Descriptive literature on the Dust Boss DB 60 is included in Appendix C. Only potable water will be used for dust control purposes.

Proactive controls will be instituted to reduce the amount of dust generation during Site activities, including enforcement of low speed limits for vehicular traffic, stopping dust-generating during high wind conditions, decontamination of trucks leaving the Site, and height limits for soil stock piles. The size of stockpiles will be limited to 250 cubic yards with an area of approximately 30 x 30 feet and height of approximately 8 feet. When not actively being worked, stockpiles will be covered to reduce dust emissions and prevent infiltration/runoff during rain events.

5.1 TRAINING OF PERSONNEL

RSI will implement a dust control training program for all Site personnel. This training program will review the potential sources of dust, individual responsibilities, and actions for controlling dust as described in this Plan. The training will emphasize the importance of dust control to the overall success of the remediation activities and familiarize Site personnel with the air monitoring requirements and appropriate dust control procedures that must be adhered to in accordance with this plan to minimize dust generation.

5.2 INSPECTION AND MAINTENANCE

Dust suppression equipment will be inspected at least once a week and properly maintained. RSI will maintain records of the weekly inspections.

6.0 POTENTIAL DUST GENERATION ACTIVITIES AND PROPOSED CONTROLS

Remediation activities will have the potential to generate emissions in the form of fugitive dust. Dust control methods will vary based on the activities occurring at the Site. Dust control methods are summarized by source below. Table 6-1 describes the activities to be conducted during the remediation activities which have the potential to generate dust and the respective dust control measures.

Table 6-1. Potential Dust Generation Activities and Proposed Control

Activity	Proposed Controls
General Dust Suppression - All Dust-Generating Activities	Water spray/mist to wet excavation areas and use of airborne dust wet suppression system as needed for dust generating activities. Adjust remediation activities. Suspend dust-generating activities under high wind conditions until sustained wind speed is below 20 mph.
Truck Traffic	Wetting unpaved and paved haul roads prior to hauling activities each morning and during working hours as needed. Lower speed limits to reduce dust generation. Remove loose material before truck exits work area.
Excavation	Water spray/mist to wet excavation areas and use of airborne dust wet suppression system as needed for dust generating activities. Adjust excavation activities. Suspend work under high wind conditions.
Soil Stockpiling	Use of airborne dust wet suppression system. Water spray/mist work area prior to beginning work and as a supplemental system. Cover stockpiles at the end of each day and when not in active use.
Soil Treatment	Use of airborne dust wet suppression system. Water spray mist work area prior to beginning work and a as a supplemental system.
Soil Loading, Hauling, and Placement	Use of airborne dust wet suppression system. Water spray mist work area prior to beginning work and as a supplemental system.

6.1 Dust Suppression Measures

6.1.1 Visible Dust

If visible dust is present in the excavation work area, increased wetting of the area using water trucks and spray misters will be implemented. If visible dust is observed leaving the active

excavation area, work will stop and additional dust control measures will be implemented. These additional dust control measures may include:

- Increased wetting/misting of excavation area(s), stockpiles, and/or roadways
- Adjusting the rate/speed and/or quantity of equipment in the excavation areas
- Applying temporary cover (paper mulch with tackifier) to excavation areas or soil stockpiles not being actively worked

6.1.2 Particulate and Metals Concentration Take Action Levels

If the thirty-minute (30-minute) average PM_{10} concentration from the downwind monitors, or the downwind sampler analytical data for metals, exceeds the applicable Take Action Levels set forth in Table 1 of the Plan, then RSI will immediately implement increased dust suppression activities. These increased dust suppression activities may include, but are not limited to the following:

- Increased wetting/misting of excavation area(s), stockpiles, and/or roadways
- Adjusting the rate/speed and/or quantity of equipment in the excavation area(s)
- Applying temporary cover (paper mulch with tackifier) to excavation areas or soil stockpiles not being actively worked

6.1.3 Particulate and Metals Concentration Stop Work Levels

If the one-hour (60-minute) average or thirty-minute (30-minute) average PM_{10} concentration from the downwind monitors exceeds the applicable Stop Work Level set forth in Table 1 of the Plan, RSI will immediately stop all excavation and soil loading and placement work. The dust suppression activities may include, but are not limited to the following:

- Increased wetting/misting of excavation area(s), stockpiles, and/or roadways
- Applying temporary cover (paper mulch with tackifier) to excavation areas or soil stockpiles not being actively worked
- Adjusting the rate/speed and/or quantity of equipment in the excvatation area(s)
- Stopping specific dust-generating activities until wind directions and/or wind speeds are more conducive to reduced dust levels
- Mobilize additional dust suppression equipment and initiate its use

6.2 Excavation Activities

Dust control measures will include water spraying/misting prior to beginning activities to control dust during excavation activities and as a supplemental system. Water to be utilized for dust suppression will be potable municipal water supplied by a fire hydrant located on the Exide property. Water to the hydrant is supplied through the City of Frisco Municipal Water System.

Water trucks will be filled at the water loading area at the Exide facility and sent to active excavation work areas for dust suppression. Excavation activities that are capable of generating dust are not permitted to continue when the water truck is cycling for additional water. The airborne dust wet suppression system will be operated during excavation as needed.

If there is a high wind condition, all excavation work will cease until the sustained wind speed decreases to less than 20 miles per hour.

6.3 Traffic – General

Vehicle travel on unpaved access roads will be limited to 10 miles per hour. Project personnel are required to obey posted speed limits to prevent wind turbulence and associated dust generated at higher vehicle and equipment velocities. Off road travel on unimproved roads will be limited to construction equipment, support vehicles and material delivery trucks.

Unpaved and paved roads will be wetted using a water truck prior to the start of activities and during working hours as appropriate to minimize dust formation without creating runoff or tracking issues.

6.4 Soil Stockpiles

Fugitive dust emissions from soil stockpiles will be controlled using temporary covers and water sprays. Controls for dust mitigation during soil stockpiling include a water spray/mist from a water truck prior to work beginning and as a supplemental system, operation of the airborne dust wet suppression system as a supplemental control as needed, and covering stockpiles. The height of stockpiles will be kept to approximately 8 ft, with a maximum volume of 250 cubic yards each. The lateral extent of each stock pile will be no greater than approximately 30 feet by 30 feet. Each

stockpile will be covered with 6 mil (or thicker) poly sheeting and weighted down by sandbags (or other appropriate weights) at the end of each day and when the stockpile is not in active use.

6.5 Soil Loading, On-Site Transportation and Placement

Soil will be loaded into haul trucks using an excavator or front end loader. The loading will be completed immediately adjacent to the stockpile area. Polyethylene sheeting will be placed on the ground in the loading area to allow any spillage that occurs during the truck loading operations to be easily cleaned up. Each truck will be inspected and soil adhering to the outside of the bed will be removed and the load tarped prior to exiting the load out area.

Loaded trucks will proceed directly from the load-out area to the onsite landfill. A truck tire decontamination area will be established at the egress from the on-site landfill. The tires of each truck will be washed in this area prior to return to the loading area. Truck tire decontamination fluids will be processed through the onsite waste water treatment plant.

A water truck will be stationed at the on-site landfill during the placement and spreading of the soil in the on-site land fill. The water truck will be used to wet the material as it is being dumped and spread. If it is determined through air monitoring that the water truck is ineffective for dust suppression, one or more large area misters will be mobilized to the site for use during this activity.

Material placed in the on-site landfill will be covered with paper mulch and tackifier to prevent the generation of dust on an as needed basis.

6.6 Soil Loading and Off-Site Transportation

Truck loading will be completed as described in 6.5. Trucks destined for off-site disposal facilities will be decontaminated at a central decon area. The vehicle decontamination area will be established in an area where the decontamination fluids can be collected and properly processed through the onsite waste water treatment system and the vehicles can exit the site over clean pavement.

6.7 Soil Excavation Equipment Decontamination

The excavation equipment will be decontaminated between each excavation area and upon completion of the excavation activities. The decontamination between each excavation area is expected to be minimal and should only include the tracks or tires and / or ground engaging parts of the equipment. The decontamination will consist of dry decontamination followed by washing with potable water, if needed. The decontamination will be completed immediately adjacent to the excavation on a prefabricated decontamination pad. The decontamination solids and liquids generated from each area will be placed on the stockpiled waste materials from the area that was excavated. If more liquids are generated during the decontamination process than will soak into the stockpiles, they will be placed into containers and transported to the onsite wastewater treatment plant for processing.

Final equipment decontamination will be completed at the central decon area described in section 6.6.

7.0 REPORTS

Daily Dust Concentration (PM_{10}) and Wind Speed and Direction summary reports will be prepared by FDS. These summary reports will include the average 30-minute net block average PM_{10} results for each downwind E-BAM instrument and the 30-minute block average wind speed and direction data. "Take Action" or "Stop Work" level exceedances and the dust suppression activities implemented in response will be documented in the summary reports.

The data will be validated by Exide's contractor as described in Section 6.4. Summary reports of the validated data will be provided to the TCEQ within two business days of receipt of verifiable results, excluding the day that the results are received. If data are received that are not able to be validated, an e-mail notification will be provided to the TCEQ with a brief description of the issue(s). The summary report with the corrected data will be resubmitted to Exide's contractor followed by validation. The summary report with validated data will then be submitted to TCEQ as described above. Concurrent with submittal to the TCEQ, the summary reports will be posted to the publicly accessible website established for the Exide Frisco Facility at www.exidefriscoclosure.com.

8.0 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance (QA) refers to the planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy a given requirement for quality. QA is applied to location and equipment selection, equipment acquisition and installation, routine site operation, and data processing and reporting.

Quality control (QC) refers to the operational techniques and activities that are used to fulfill requirements for quality. QC procedures applied at each step provide checks for acceptable conditions with corrective procedures specified when necessary.

The purpose of QC procedures is to assess and document data quality and to define remedial corrective actions when operating conditions exceed pre-established limits. Routine QC procedures are designed to focus on areas most likely to have problems, based on experience and guideline documents. The following subsections describe the QC, calibration, and auditing procedures to be used during this project.

8.1 Particulate Monitors

8.1.1 Quality Control

The E-BAM particulate monitor beta detectors are calibrated at the factory. The beta detector calibrations remain fixed for the life of the unit, and no user adjustments are required. Each unit has test membranes that are placed in the beta particle pathway to verify performance of the detector. The test membranes are thin sheets of material that absorb a fraction of beta particles equivalent to a known mass of particulate matter. Each instrument has an individually matched membrane, and the factory-provided equivalent mass reading is stored in the instrument. The reference membrane tests are manually performed prior to the start of the project and at least every three weeks (the manufacturer recommends a frequency of one or two times per year for the E-BAM). The units are also equipped with zero-check inserts that are used in the same manner as the reference membranes. The zero check insert test will be performed prior to the start of the project and prior to the start of work each week.

QC flow checks will be performed by RSI personnel every three weeks to ensure that the correct sample flow rate is being maintained to provide proper particle size separation. The flow rate calibration is performed using a traceable reference standard flow audit device (BGI deltaCal® or equivalent). The barometric pressure and ambient temperature must be audited and calibrated, if necessary, prior to the flow check. The ambient temperature and barometric pressure indicated on the traceable reference standard flow audit device is compared to the ambient temperature and barometric pressure indicated on the E-BAM. If necessary, the ambient temperature and barometric pressure indicated on the traceable standard flow audit device is entered into the E-BAM to correct the E-BAM internal ambient temperature and/or barometric pressure sensor reading. The flow rate calibration can then be performed. The E-BAM internal flow rate is audited based upon the flow rate indicated by the traceable reference standard flow audit device. If necessary the E-BAM flow rate indicated on the traceable standard flow audit device is entered into the E-BAM to correct the E-BAM internal flow sensor reading. A pump test will be performed every three weeks as well.

The E-BAM particle size selective inlets are designed to function at a flow rate of 16.7 L/min to maintain proper particle separation. Cleaning of the size selective inlets on the particulate monitors will be conducted prior to the start of each work week. The larger particles that are removed from the air flow are captured inside the PM_{10} inlet heads. To maintain proper operation of the inlets, the particle deposits must be cleaned periodically. A leak check will be performed weekly and when the tape is removed or a new tape is installed. The nozzle and vane beneath the filter tape will be cleaned each time the tape is changed but at a minimum of once per month.

8.2 Air Samplers

8.2.1 Quality Control

Field and trip blank quality control samples will be collected. Field blank samples assess the possible contamination introduced by field sampling procedures, sampling media, sampling equipment, or shipment of the samples. Trip blanks verify the cleanliness of the sampling media.

The field blank will be shipped to the field, prepared, and handled as the other samples, and returned to the laboratory, without drawing air through the air sampler, for analysis. One field blank will be collected each week for metals analysis. The trip blank will be shipped to the field,

left sealed in its packaging, and then returned to the laboratory for analysis. One trip blank will be analyzed per month.

8.2.2 Quality Assurance

Precision and accuracy checks are both elements of QA. Precision checks are a measure of agreement among individual measurements of the same parameter, usually under prescribed similar conditions. Accuracy is the degree of agreement between an accepted reference measurement and the field measurement. Accuracy may be expressed as a total difference, or as a percentage of the reference value, or as a ratio. Precision checks are performed as collocated measurements.

Accuracy of ambient air sampling equipment is measured in terms of the accuracy of the flow rate measurement. Accurate determination of the air volume drawn through the air sampler is essential to the concentration calculation. Flow rates of the air samplers will be determined pre- and post-sampling using calibrated equipment appropriate to the sampling device and will be provided to the laboratory along with the sample.

Preventive maintenance will be part of the air samplers' QA program. Preventive maintenance is a combination of preventive and remedial actions taken to prevent or correct failure of the monitoring systems. Preventive maintenance for the air samplers includes inspection and cleaning of the inlets.

8.3 Laboratory Validation

Data validation is used to interpret the quality of the analytical data received from the laboratory. The quality of the data is determined through evaluation of both the field and laboratory quality control samples. Data validation procedures determine whether individual project data are useable, useable with qualification, or unusable. Data will be reviewed in accordance with guidelines presented in USEPA's *National Functional Guidelines for Inorganic Superfund Data Review* (2010) and/or *National Functional Guidelines for Organic Superfund Data Review* (2008).

The Laboratory will submit the analytical data and supporting QA/QC data to Exide's consultant for validation. The validation review will consist of a Level II review which includes the following: blank samples (i.e., trip, method, equipment, field, etc.) are reviewed for detections which may indicate whether field or laboratory handling may have cross-contaminated samples causing false positive or high-biased data; spike recovery samples (i.e., laboratory control sample, surrogate, or matrix spike) are reviewed to evaluate accuracy in the laboratory's ability to recover known concentrations that were intentionally spiked into the quality control samples; and, duplicate samples (laboratory-prepared) are evaluated to determine precision, which is the level of agreement among individual measurements. In addition to the above quality control samples, verification of appropriate analytical methods, reporting limits, sample preservation, and holding times are also reviewed to determine data usability.

Any potential bias (high or low) or cross-contamination observed as a result of the data review is usually addressed by addition of data qualifiers. These typically include one of the following: a non-detect (U) flag for blank detections indicating the potential for cross-contamination; an estimated (J) flag for results that could be biased high or low due to accuracy or precision issues; rejection of data (R) due to results grossly outside their respective control limits or questionable data.

8.4 Dust Concentration, Wind Speed and Direction Report Validation

The Daily Dust Concentration and Wind Speed and Direction summary reports will be prepared by FDS and provided to Exide's consultant for validation. The review will include review of error reports, previous instrument flow and leak check information as well as review of the data received to insure the data being reported is from the instruments being used at the Site.

8.5 Sample Information Management

The sample information management system for the monitoring will be based on a uniform sample identification system. Each sample will receive a unique ID that is based on the unique combination of project, sampling date, sampling location and the Serial Number of the E-BAM Monitor that the sample is associated with.

9.0 POINTS OF CONTACT

Concerns regarding activities conducted at the Exide Technologies Frisco Recycling Center should be addressed to the following points of contact:

Exide:
Matt Love
3000 Montrose Avenue
Reading, PA 19605
Ph: 610-921-4054
Matt.love@Exide.com

Texas Commission on Environmental Quality:
Margaret Ligarde
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Margaret.ligarde@tceq.texas.gov

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mborchardt@friscotexas.gov

APPENDICES

APPENDIX A

Descriptive Literature on E-BAM Particulate Monitors

E-BAM

E-BAM is a complete measurement system it comes with the following standard components:

- 8 Channel Datalogger
- Internal DC Vacuum Pump Standard
- Real-Time Concentration
- PM10 Inlet
- Aluminum Tripod
- Ambient Temperature Sensor
- Volumetric Flow Control
- Weatherproof Enclosure
- Filter Temperature Sensor
- Filter RH Sensor
- Filter Pressure Sensor
- Calibration Membrane

Specifications

Range	0 - 65 mg per cubic meter
Accuracy	2.5 µg or 10% in 24 hour period
Measurement Cycle	Hourly measurements with 1, 5, 10, 15, or 30 min real-time averages
Beta Source	C14, less than 75 microcurie, Half life of 5730 years
Detector:	Scintillation probe
Analog Output	0-1V, 0-2.5v, 0-5V, selectable hourly or real-time output
Filter Tape	Continuous glass fiber filter
Inlet	Compatible with EPA PM10 and PM2.5 inlets
Flow Rate:	16.7 liters per minute, adjustable
Flow accuracy	+/- 2% of reading, volumetric flow controlled
Sample Pump	Dual diaphragm type, DC powered, 4000 hr rating
Alarm Signals	Filter, flow, power and operation failure
Input Power	12 Volts DC @ 48 Watts max
Alarm Contact Closure	2 Amp @ 240 VAC max
Operating Temperature	-30 Deg C to 50 Deg C
Enclosure	41 cm x 36 cm x 20 cm, 13kg

Options and Accessories

- BX-302 Zero Calibration Kit
- BX-305 Leak check valve
- BX-307 Flow Calibrator
- BX-308 PM2.5 Sharp-Cut Cyclone
- BX-803 TSP Inlet
- EX-034 Wind speed and direction sensor
- EX-121 AC Power supply, 100-240 VAC, 12 VDC output
- EX-593 Ambient RH Sensor
- EX-996 Phone modem kit
- EX-911 Cell modem kit
- 460130 Filter tape, roll
- 9425 Wall mount bracket
- Airsis Satellite modem kit
- External AC Vacuum Pump
- MMP MicroMet Plus Software
- Solar Panel Array

Met One Instruments, Inc.
Corporate Sales & Service: 1600 Washington Blvd., Grants Pass, Oregon 97526 • Tel (541) 471-7111 • Fax (541) 471-7116
Regional Sales & Service: 3206 Main Street, Suite 106, Rowlett, Texas 75088 • Tel (972) 412-4747 • Fax (972) 412-4716
http://www.metone.com • metone@metone.com

Rev. 08/09

The Met One E-BAM is a portable, real-time beta gauge which is comparable to U.S. EPA methods for $PM_{2.5}$ and PM_{10} particulate measurements.

The Met One E-BAM has been built to satisfy users, regulators and those from the health community by providing truly accurate, precise, real time measurement of fine particulate matter automatically. In addition, it is rugged, portable, battery operated, and deployable in 15 minutes.

The E-BAM offers the following advanced features:

1. Accuracy and precision consistent with U.S. EPA requirements for Class III $PM_{2.5}$ and PM_{10} measurement.
2. Real-time, accurate results without correction factors, regardless of season or geographic location.
3. True ambient sampling provides accurate measurement of semi-volatile nitrates and organic compounds.
4. Lightweight, rugged construction is easily mounted on a tripod in minutes.
5. All-weather construction allows for true ambient sampling.
6. Operates on AC or DC power. Battery and Solar options available upon request.

Met One Instruments, Inc.

Met One Instruments, Inc.

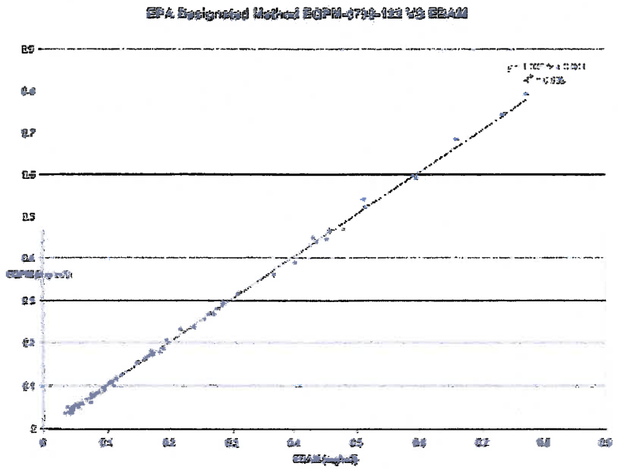
Continuous Monitoring

The E-BAM automates particulate measurement by continously sampling and reporting concentration data. Data records are updated every minute. E-BAM eliminates the old process of filter collection and manual filter weighing, and eliminates the need for more expensive, high maintenance instruments. Today, with the adaptation of Beta Attenuation to ambient monitoring this process became simple, streamlined, and inexpensive.

About Accuracy

Real-time accurate, reliable, and repeatable measurement of ambient fine particulate matter has been the elusive goal of environmental regulators and health professionals for many years. Met One Instruments has developed advanced particulate monitoring instrumentation which is reliable, and is easy to operate. It will also automatically report results in near real time, eliminating the need for high levels of human intervention.

Because sampling occurs under true ambient conditions semi-volatile organic compounds and nitrates are easily detected thereby avoiding under measurement.



Continuous Sampling

E-BAM is a lightweight portable instrument that operates directly in hostile environments without an exterior enclosure. E-BAM is a very robust portable sampler system that is easily installed in less than 15 minutes. No other sampler matches the portability and flexibility of the E-BAM.

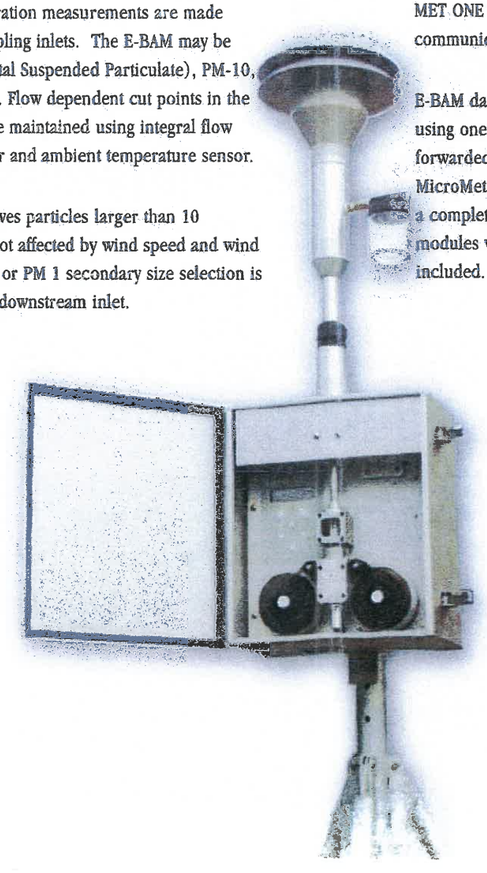
Set up

Quick setup of the E-BAM is assured with a series of prompts instructing the installer on the sequence to follow. Then the E-BAM performs a series of self test diagnostics and alerts the installer of any corrective action. Upon completion, the E-BAM automatically places itself in normal operate mode.

Particulate size selection

Size selective concentration measurements are made using a variety of sampling inlets. The E-BAM may be supplied with TSP (Total Suspended Particulate), PM-10, PM 2.5 or PM 1 inlets. Flow dependent cut points in the size selective inlets are maintained using integral flow meter, pressure sensor and ambient temperature sensor.

The PM-10 inlet removes particles larger than 10 microns, the inlet is not affected by wind speed and wind direction. For PM 2.5 or PM 1 secondary size selection is made using a second downstream inlet.



Construction etc.

The standard configuration of the E-BAM is a self-contained environmentally sealed aluminum enclosure placed on a rugged tripod. This system can be permanently placed on rooftops, near roads, at industrial sites, or rapidly deployed to monitor emergency situations.

'E- 'represents Environment Proof instrument, E-BAM has been specifically designed to work in hostile environments without additional protection.

Direct Field Reporting

Collecting real time or historical particulate data from a field site has never been easier. Advanced communication options include cellular phone, Line of Sight Radio, and for very remote sites, satellite communications are now available. E-BAM also supports the full line of standard MET ONE options, such as phone modem, and direct communications to a portable computer.

E-BAM data is recorded internally and may be retrieved using one of the communication options, or data may be forwarded to third party data acquisition system. MicroMet Plus Software supports the E-BAM and provides a complete communication, data base and reporting modules with charting. Comet data retrieved software is included.

Digital, Analog and Alarm Outputs

The E-BAM provides both continuous digital and analog outputs. Analog output is selectable to several full-scale voltages. Digital output is supplied as RS-232.

Reporting modes

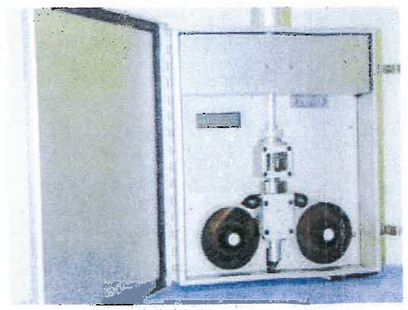
The internal data logger can store up over 182 days of concentration data at one hour sample times, and collect data from eight other measurements at the same time! Both digital and analog outputs are included to enable users to connect to other data recording systems.

Easy to Operate

E-BAM has been programmed to operate at all times, except during calibration verification. Current data, historical data, and status information are available at all times without interrupting normal E-BAM operation.

Data Validation

The operator may select various criteria for data validation, including deviation from rolling average, high value excursions, power failure and others. If an error occurs it is entered into the error log with date, time and type of error.



APPENDIX B

NIOSH Method 7303

METALS ANALYSES DETAILS - NIOSH METHOD 7303

ELEMENTS by ICP (Hot Block/HCl/HNO_3 Digestion)

7303

MW: Table 1 CAS: Table 2 RTECS: Table 2

METHOD: 7303, Issue 1 **EVALUATION: PARTIAL** **Issue 1: 15 March 2003**

OSHA: Table 2
NIOSH: Table 2
ACGIH: Table 2

PROPERTIES: Table 1

ELEMENTS:

aluminum	cadmium	indium	nickel	strontium	zinc
antimony*	calcium	iron	palladium	tellurium	
arsenic	chromium	lead*	phosphorus	thallium	
barium	cobalt	magnesium	platinum	tin*	
beryllium	copper	manganese	potassium	titanium	
bismuth*	gallium	molybdenum	selenium	vanadium	
boron	gold	neodymium	sodium	yttrium	

* With certain restrictions (see Table 3)

SAMPLING

SAMPLER: FILTER (0.8-µm, cellulose ester membrane)

FLOW RATE: 1 to 4 L/min

VOL-MIN: Table 1
-MAX: Table 1

SHIPMENT: Routine

SAMPLE STABILITY: Stable

BLANKS: 2 to 10 field blanks per set

ACCURACY

RANGE STUDIED: 5,000 to 50,000 µg/sample

BIAS: Not determined

OVERALL PRECISION: Not determined

ACCURACY: Not determined

MEASUREMENT

TECHNIQUE: INDUCTIVELY COUPLED ARGON PLASMA, ATOMIC EMISSION SPECTROSCOPY

ANALYTE: See element list above

REAGENTS: Conc. HCl, 1.25 mL; and conc. HNO_3, 1.25 mL

FINAL SOLUTION: 5% HCl and 5% HNO_3, 25 mL

WAVELENGTH: Element and instrument specific

BACKGROUND CORRECTION: Spectral wavelength shift

CALIBRATION: Elements in 5% HCl, 5% HNO_3

RANGE: LOQ to 50,000 µg/sample [1]

ESTIMATED LOD: Varies with element; Table 1

PRECISION (Š): Not evaluated

APPLICABILITY: The working range of this method is up to 100 mg/m³ for each element in a 500-L sample (the minimum range depends on the LOD for each sample; see Table 1). The analysis is not compound specific. Certain elemental compounds are known to be acceptable or unacceptable by this method (see Table 3). For unverified compounds, a test run should be conducted using a known amount of the compound in question to determine acceptability.

INTERFERENCES: Interferences are spectral in nature and are accounted for by choosing appropriate wavelengths, applying interelement correction factors, and background correction.

OTHER METHODS: Alternative, more sensitive methods exist for some elements by graphite furnace atomic absorption spectroscopy. This method is similar to NIOSH Method 7301, differing only in the use of the hot block for digestion of the sampler.

REAGENTS:

1. Hydrochloric acid,* conc., ultra pure.
2. Nitric acid,* conc., ultra pure.
3. Calibration stock solutions, 50-1000 µg/mL. Commercially available single element solutions or multielement solutions prepared as instructed by the instrument manufacturer.
4. Argon, prepurified.
5. Distilled, deionized, Type II water.
6. Diluting solution: 5% HCl : 5% HNO_3. To about 600 mL of deionized water in a 1-L volumetric flask, slowly add 50 mL conc. HCl and 50 mL conc. HNO3. Dilute to the mark with deionized water.

* See SPECIAL PRECAUTIONS

EQUIPMENT:

1. Sampler: cellulose ester membrane filter, 0.8-µm pore size, 37-mm diameter; in cassette filter holder.
2. Personal sampling pump, 1 to 4 L/min, with flexible connecting tubing.
3. Inductively coupled argon plasma-atomic emission spectrometer, equipped as specified by the manufacturer for analysis of elements of interest.
4. Hot block apparatus at 95 °C.
5. Digestion vessels and caps, 50-mL.
6. Watchglasses.
7. Pipettes, electronic and mechanical.
8. Regulator, two-stage, for argon.
9. Forceps.

SPECIAL PRECAUTIONS: Concentrated acids are powerful oxidizers, toxic, and corrosive liquids. Wear protective clothing and work in a fume hood.

SAMPLING:

1. Calibrate each personal sampling pump with a representative sampler in line.
2. Sample at an accurately known flow rate between 1 and 4 L/min for a total sample size of 200 to 2000 L for TWA measurements. Do not exceed a filter loading of approximately 2 mg total dust.

SAMPLE PREPARATION:

3. Open the cassette filter holder and with forceps remove the sample filter. Fold the filter into quarters taking care not to lose any sample, and transfer to a clean, 50-mL hot block digestion tube.
4. Add 1.25 mL HCl. Cover with a plastic watchglass. Place in the hot block and heat at an internal temperature of 95 °C for 15 minutes.
   NOTE: The internal temperature may vary from the digital readout. Calibrate the hot block prior to digestion.
5. Remove the sample from the hot block and cool for 5 minutes. Remove watchglass and add 1.25 mL HNO_3. Replace watchglass and return to hot block at 95 °C for 15 minutes.
6. Remove the sample from the hot block and cool for at least 5 minutes. Rinse watchglass into the sample container and discard watchglass.
7. Dilute to 25-mL final volume with distilled, deionized Type II water.

CALIBRATION AND QUALITY CONTROL:

8. Calibrate the spectrometer according to the manufacturer's recommendations. Use standards consisting of the same 5% HCl : 5% HNO_3 matrix as the samples.
9. Analyze a standard every 10 samples.
10. Analyze a media blank every 20 samples, and a reagent blank every 10 samples.
11. Analyze a set of two laboratory control samples every 40 samples of a given matrix for a given analyte.
12. Check recoveries with at least two spiked media blanks per ten samples.
    NOTE: In the determination of lead, there may be a measurement interference (for example, samples with high aluminum levels). More recent instruments have a correction for this.

MEASUREMENT:

13. Set spectrometer to conditions specified by manufacturer.
14. Analyze standards, samples and quality control checks.
    NOTE: If the elemental value for a sample is above the linear range of the element(s) in question, dilute the sample solution with 5% HCl : 5% HNO_3 diluting solution, reanalyze and apply the appropriate dilution factor in the calculations.

CALCULATIONS:

15. Obtain the solution concentrations for the sample, C_s (µg/mL), and the average media blank, C_b (µg/mL), from the instrument.
16. Using the solution volumes of sample, V_s (mL), and media blank, V_b (mL), calculate the concentration, C (mg/m^3), of each element in the air volume sampled, V (L):

$$C = \frac{C_s V_s - C_b V_b}{V}, mg/m^3$$

NOTE: µg/L ≡ mg/m^3

EVALUATION OF METHOD:

The method was evaluated for all elements and compounds listed in Table 1 and Table 2 between 1999 and 2001 using known amounts of bulk material [4]. Evaluation is ongoing for additional elements and compounds. The limits of detection and quantitation were also determined for each element. Two ICP instruments were used in the evaluation, a Thermal Jarrell Ash Model 61E [5] and a TJA IRIS [6], operated according to the manufacturer's instructions.

REFERENCES:

[1] WOHL [2001]. Metals validation using hot block digestion, Unpublished data. Wisconsin Occupational Health Laboratory, Madison, WI.
[2] NIOSH [1994]. Method 7300: Elements by ICP,.NIOSH Manual of Analytical Methods, Fourth Edition, Issue 2, Aug. 15, 1994.
[3] WOHL [2001]. Metals Manual 2001, WOHL Internal Document, Updated Apr. 1, 2001. Wisconsin Occupational Health Laboratory, Madison, WI.
[4] WOHL [2001]. WOHL General Operations Procedures Manual, WOHL Internal Document, Updated 2001. Wisconsin Occupational Health Laboratory, Madison, WI.
[5] Thermal Jarrell Ash [1991]. ICAP 61E Plasma Spectrometer Operator's Manual, Thermal Jarrell Ash Corp., Part No. 128832-01, Feb., 1991.
[6] Thermal Jarrell Ash [1997]. IRIS Plasma Spectrometer User's Guide, Thermal Jarrell Ash Corp., Part No. 135811-0, Feb. 4, 1997.

METHOD WRITTEN BY:

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TABLE 1: ANALYTE INFORMATION FOR VALID ELEMENTS AND COMPOUNDS

Analyte	Properties		LOD (µg/mL)	LOQ (µg/mL)	Estimated LOQ (µg/sample)*	Minimum** air vol. (L)	Maximum*** air vol. (L)
	MW	MP (°C)					
Al	26.98	660	0.111	0.37	9.25	2	10,000
As	74.92	817	0.009	0.03	0.075	8	5,000,000
Au	196.97	10.63	0.015	0.05	1.25	1	3,300
B	10.81	2177	0.0094	0.0283	0.71	1	3,300
Ba	137.34	3.51	0.0018	0.006	0.15	1	100,000
Be	9.01	2178	0.00075	0.0025	0.062	35	25,000,00
Bi	208.98	271	0.025	0.085	2.12	1	10,000
Ca	40.08	842	0.099	0.33	8.25	2	10,000
CaO	56.08	2927	0.139	0.462	11.6	3	10,000
Cd	112.4	321	0.0037	0.012	0.30	3	500,000
Co	58.93	1495	0.003	0.011	0.27	3	500,000
Cr	52.00	1890	0.009	0.03	0.75	8	500,000
Cu	63.54	1083	0.020	0.060	1.50	15	500,000
Fe	55.85	1535	0.070	0.20	5.00	1	5,000
Fe_2O_3 (as Fe)	159.69	1462	0.070	0.20	5.00	1	5,000
Ga	69.72	29.75	0.03	0.09	2.25	1	3,300
In	114.82	156.3	0.015	0.05	1.25	15	500,000
Mg	24.31	651	0.047	0.14	3.50	1	10,000
MgO	40.32	2825	0.078	0.23	5.75	5	33,000
Mn	54.94	1244	0.0012	0.004	0.10	0.05	10,000
Mo	95.94	651	0.0072	0.024	0.60	0.5	10,000
Nd	92.906	2477	0.01	0.03	0.75	0.1	3,300
Ni	58.71	1453	0.012	0.039	0.98	1	50,000
P	30.97	44	0.3	1.0	25	250	500,000
Pb	207.19	328	0.023	0.07	1.75	35	100,000
Pd	106.4	1550	0.009	0.03	0.75	0.1	3,300
Pt	195.09	1769	0.0045	0.015	0.38	200	25,000,000
Sb	121.75	630.5	0.018	0.06	1.50	3	100,000
Se	78.96	217	0.021	0.064	1.60	8	250,000
Sn	118.69	232	0.015	0.05	1.25	1	25,000
Sr	87.62	769	0.002	0.006	0.15	300	100,000,000
Te	127.60	450	0.15	0.5	12.5	125	500,000
Ti	47.90	1675	0.005	0.016	0.40	0.1	10,000
Tl	204.37	304	0.044	0.133	3.32	35	500,000
V	50.94	1890	0.003	0.01	0.25	2.5	500,000
Y	88.91	1495	0.001	0.003	0.075	0.1	50,000
Zn	65.37	419	0.022	0.066	1.65	0.5	10,000
ZnO	81.37	1970	0.027	0.082	2.05	0.5	10,000

* Value based on a 25-mL sample volume.

** The minimum sampling volume needed to obtain the OSHA PEL at the LOQ for the element/compound at a sample digestion volume of 25 mL.

*** The maximum sampling volume for a given sample, calculated by taking 50,000 µg as the limit for the element/compound per sample.

NOTE: The LOD and LOQ values are dependent on the particular analytical instrument used. Also, LOD and LOQ values may vary for a particular element due to certain interelement interferences.

TABLE 2. EXPOSURE LIMITS, CAS #, RTECS

Element (Symbol)	CAS #	RTECS	Exposure Limits, mg/m³ (Ca = carcinogen) OSHA	NIOSH	ACGIH
Silver (Ag)	7440-22-4	VW3500000	0.01 (dust, fume, metal)	0.01 (metal, soluble)	0.1 (metal) 0.01 (soluble)
Aluminum (Al)	7429-90-5	BD0330000	15 (total dust) 5 (respirable)	10 (total dust) 5 (respirable fume) 2 (salts, alkyls)	10 (dust) 5 (powders, fume) 2 (salts, alkyls)
Arsenic (As)	7440-38-2	CG0525000	varies	C 0.002, Ca	0.01, Ca
Barium (Ba)	7440-39-3	CQ8370000	0.5	0.5	0.5
Beryllium (Be)	7440-41-7	DS1750000	0.002, C 0.005	0.0005, Ca	0.002, Ca
Calcium (Ca)	7440-70-2	–	varies	varies	varies
Cadmium (Cd)	7440-43-9	EU9800000	0.005	lowest feasible, Ca	0.01 (total), Ca 0.002 (respir.), Ca
Cobalt (Co)	7440-48-4	GF8750000	0.1	0.05 (dust, fume)	0.02 (dust, fume)
Chromium (Cr)	7440-47-3	GB4200000	0.5	0.5	0.5
Copper (Cu)	7440-50-8	GL5325000	1 (dust, mists) 0.1 (fume)	1 (dust) 0.1 (fume)	1 (dust, mists) 0.2 (fume)
Iron (Fe)	7439-89-6	NO4565500	10 (dust, fume)	5 (dust, fume)	5 (fume)
Potassium (K)	7440-09-7	TS6460000	–	–	–
Lanthanum	7439-91-0	–	–	–	–
Lithium (Li)	7439-93-2	–	–	–	–
Magnesium (Mg)	7439-95-4	OM2100000	15 (dust) as oxide 5 (respirable)	10 (fume) as oxide	10 (fume) as oxide
Manganese (Mn)	7439-96-5	OO9275000	C 5	1; STEL 3	5 (dust) 1; STEL 3 (fume)
Molybdenum (Mo)	7439-98-7	QA4680000	5 (soluble) 15 (total insoluble)	5 (soluble) 10 (insoluble)	5 (soluble) 10 (insoluble)
Nickel (Ni)	7440-02-0	QR5950000	1	0.015, Ca	0.1 (soluble) 1 (insoluble, metal)
Phosphorus (P)	7723-14-0	TH3500000	0.1	0.1	0.1
Lead (Pb)	7439-92-1	OF7525000	0.05	0.05	0.05
Antimony (Sb)	7440-36-0	CC4025000	0.5	0.5	0.5
Selenium (Se)	7782-49-2	VS7700000	0.2	0.2	0.2
Tin (Sn)	7440-31-5	XP7320000	2	2	2
Strontium (Sr)	7440-24-6	–	–	–	–
Tellurium (Te)	13494-80-9	WY2625000	0.1	0.1	0.1
Titanium (Ti)	7440-32-6	XR1700000	–	–	–
Thallium (Tl)	7440-28-0	XG3425000	0.1 (skin) (soluble)	0.1 (skin) (soluble)	0.1 (skin)
Vanadium (V)	7440-62-2	YW240000	–	C 0.05	–
Tungsten	7440-33-7	–	5	5 10 (STEL)	5 10 (STEL)
Yttrium (Y)	7440-65-5	ZG2980000	1	N/A	1
Zinc (Zn)	7440-66-6	ZG8600000	–	–	–
Zirconium (Zr)	7440-67-7	ZH7070000	5	5, STEL 10	5, STEL 10

TABLE 3: VALIDATION SUMMARY

Analyte	Status[1]	Analyte	Status	Analyte	Status
Ag	Not Valid	CuO	Valid	S	Not Valid
Al	Valid	Fe	Valid	Sb	Partially Valid[4]
Al_2O_3	Not Valid	Fe_2O_3	Valid	Sb_2O_3	Partially Valid[5]
As	Valid	Ga	Valid	Se	Valid
Au	Valid	In	Valid	Si	Not Valid
B	Valid	KCl	Pending	Sn	Partially Valid[6]
Ba	Pending	Mg	Valid	SnO	Pending
BaO	Pending	MgO	Valid	SnO_2	Pending
BaO_2	Pending	Mn	Valid	Sr	Valid
$BaCl_2$	Valid	MnO	Valid	$SrCrO_4$	Valid (by Cr)
$BaSO_4$	Pending	Mo	Valid	Te	Valid
Be	Valid	NaCl	Pending	Ti	Valid
Bi	Partially Valid[2]	Nd	Valid	Tl	Valid
Ca	Valid	Ni	Valid	V	Valid
$CaCO_3$	Valid	P	Valid	V_2O_5	Valid
CaO	Valid	Pb	Partially Valid[3]	Y	Valid
Cd	Valid	$PbCrO_4$	Valid (by Cr)	Zn	Valid
Co	Valid	PbO	Valid	ZnO	Valid
Cr	Valid	Pd	Valid	Zr	Not Valid
Cu	Valid	Pt	Valid	ZrO	Not Valid

[1] Status definitions

Valid: The method is suitable for samples up to at least 0.0500 g bulk material with recoveries of between 90 and 110 percent. This weight exceeds most expected levels encountered in work environments.

Partially Valid: The method is suitable with bulk-material recoveries of between 90 and 110 percent under certain conditions (as footnoted above).

Not Valid: The method procedure is not suitable for samples at any weight with recoveries of between 90 and 110 percent. An alternative method should be used.

[2] Valid up to 10,000 µg/sample and within 7 days of sample digestion.

[3] Valid up to 50,000 µg/sample and at least 24 hours after sample digestion; Valid up to 15,000 µg/sample within 24 hours of sample digestion.

[4] Valid up to 25,000 µg/sample and within 7 days of sample digestion.

[5] Valid up to 25,000 µg/sample and within 7 days of sample digestion.

[6] Valid up to 30,000 µg/sample and within 7 days of sample digestion.

NOTE: The upper limits of the method can be extended by serial dilution of the samples at the time of analyses.

APPENDIX C

Descriptive Literature on Dust Boss Misting Equipment

DUSTBOSS®
www.dustboss.com

DB-60 SPECS >

GENERAL SPECIFICATIONS

> 30,000 CFM (849.50 CMM) generated by 25 HP fan.
> 21,000 square feet (1,950 square meters) coverage. Up to 84,000 square feet (7,804 square meters) coverage available with optional 180° oscillation.
> Oscillator gives 0–40° of movement on standard unit. Unit can also be equipped with optional 180° oscillation.
> Adjustable angle of throw 0–50° of height adjustment.

ELECTRICAL SPECIFICATIONS

> U.S.: 3 Phase / 25 HP fan / 480 Volt / 60 Hertz .
Full load current is 46 amps. 60 Kw gen set is recommended.
Motor is designed with a 1.15 service factor capable of operating at +/- 10% of design voltage.
> Other motor options available, including all international electrical motors:
- 3 Phase / 25 HP fan /380 Volt / 50 Hz (Europe, Middle East, N. Japan, Latin America)
- 3 Phase / 25 HP fan /400 Volt / 50 Hz (Europe, Japan, New Zealand, Australia)
- 3 Phase / 25 HP fan /415 Volt / 50 Hz (Europe, New Zealand, Australia)
- 3 Phase / 25 HP fan /575 Volt / 60 Hz (Canada)
- 3 Phase / 25 HP fan /380 Volt / 60 Hz Korea)
- 3 Phase / 25 HP fan /440 Volt / 60 Hz (Mexico)

> 380, 400, 415 volt / 50 Hz motors are designed with a 1.00 service factor capable of operating at +/- 10% of design voltage.
> 10 HP (7.5 Kw) high-pressure booster pump with no lift.
> 1/8 HP (0.10 Kw) oscillator.
> 150 foot (45.72 meters) 6/4 electrical cord. Other options available.
> No male plug. "bare wired" is standard. Any plug is extra cost.
> Cabinet with control panel.

WATER SPECIFICATIONS

> 10PSI (0.69 BAR) constant pressure needs to be delivered to booster pump. Maximum inlet water pressure should not exceed 100 PSI (6.89 BAR) when operating the booster pump.
> Maximum PSI delivered by booster pump is 200 PSI (13.79 BAR).
> Filter is included and should be used at all times. Contact us for recommendations when using nonpotable water.
(Filter system in-line 30 mesh 595 micron).
> 1-1/2" (38.10 mm) cam-and-groove quick disconnect female coupling for fire hose provided on machine.
> 30 brass nozzles (also available in stainless and nylon).
> Droplet size of 50–200 microns.
> Throw 200 feet (60 meters).

ENGLISH UNITS	WITHOUT BOOSTER PUMP				WITH BOOSTER PUMP		
Water Pressure, psi	40	60	80	100	160	180	200
Water Flow, gpm	12	14.6	16.9	18.9	23.9	25.4	26.7
METRIC UNITS							
Water Pressure, bar	2.8	4.14	5.5	6.89	11	12.4	13.8
Water Flow, lpm	45.3	55.4	64.0	71.6	90.5	96.0	101.2
1-1/2" FIRE HOSE WATER SUPPLY							

NOISE LEVELS

WITH BOOSTER PUMP	CONTROL PANEL SIDE	BACK SIDE OF FAN	OPPOSITE SIDE	DISCHARGE
0 feet	92	103	92	100
12 feet	86	89	84	88
WITHOUT BOOSTER PUMP	CONTROL PANEL SIDE	BACK SIDE OF FAN	OPPOSITE SIDE	DISCHARGE
0 feet	86	101	88	96
12 feet	80	87	80	84

DIMENSIONS

ON STANDARD WHEELED CARRIAGE

> 6.75 feet (81 inches; or 2.06 meters) wide.
> 9.75 feet (117 inches; or 2.97 meters) long.
> 7.17 feet (86 inches; or 2.19 meters) tall.
> 1800 lbs. (816.50 kilograms).

MAINTENANCE

> If using potable water, nozzles need to be inspected once a year.
> Fan motor and high pressure pump should be greased every 10,000 hours.
> Oscillator bearing should be greased on a regular maintenance schedule, or as needed.

CHEMICAL ADDITIVES

> Can be used with surfactant to improve binding of dust particles or with tackifying agents to seal the ground to prevent dust from becoming airborne
> Odor control chemicals can be used to help eliminate odor.

OPTIONS

> Unit is available with optional 180° oscillation. Standard oscillation provides 0–40° of movement.
> Available on frame with skid mount. Unit comes standard on wheeled carriage.
> Dosing pump can be added to unit for chemical applications.

WARRANTY

> Unit is covered by a 3-year/3,000-hour warranty.

> CALL: 1 (800) 707-2204 (U.S.)
+1 (309) 693-8600 (Int'l)
> 24 HR Technical Support: (309) 645-3691
www.dustboss.com

PLYMOUTH TECHNOLOGY

XP 355

DESCRIPTION AND USE

XP 355 is a liquid dust suppressant that can be added to dry material at any point in the operation.

XP 355 is effective at low dosage levels providing superior performance and economical treatment.

TYPICAL PROPERTIES

These properties are typical. Refer to the MSDS for the most current data.

Appearance:	Red Liquid
pH:	NA
Solubility in water:	Low

FEED METHOD & DOSAGE

XP 355 dosage varies depending on plant conditions. Your Plymouth Technology representative will conduct a series of on site testing to determine optimal feed rates for your application.

Typical dosage rates are 20-40 ounces per ton.

The most effective method of application is to spray the liquid through multiple nozzles on the dry material as it is being conveyed.

MATERIALS OF COMPATIBILITY

Compatible: Tanks – HPDE, PP, XLPE
Fittings – PVC, CPVC, EDPM, Viton

Non-Compatible: Fittings –Copper, Aluminum

PACKAGING

Packaging is standard in bulk, one way intermediate bulk containers (totes) and 55-gallon drums.

STORAGE

Recommended storage periods:
Material as supplied: 12 months

Protect from freezing.

HANDLING

For complete safety information, please refer to the Material Safety Data Sheet.

CHEMICAL EMERGENCY NUMBER:

1-800-535-5050

Plymouth Technology, Inc.
2925 Waterview • Rochester Hills • MI • 48309 USA
(248) 537-0081 • Fax (248) 537-0088
www.PlymouthTechnology.com

APPENDIX D

Descriptive Literature on Dust Suppression Material

Conwed Fibers®

Family of Hydraulic Mulch Products

Setting the Standards for Erosion Control Since 1965

Conwed Fibers® Is Your Insurance Policy Against the Storm of Phase II

Nothing is changing the face of erosion control more dramatically than the Clean Water Act. Noncompliance with the National Pollution Discharge Elimination System (NPDES) Phase II storm water regulations is subject to administrative orders, civil actions and/or criminal prosecutions on federal, state, county and/or local level. Conwed Fibers® can help ensure you'll be in compliance by helping you calculate the Revised Universal Soil Loss Equation (RUSLE) and select the most effective mulches for your site. Don't leave anything to chance. Ask the Conwed Fibers experts.

Select the Right Mulch for Your Specific Job

A broad range of Conwed Fibers hydraulic mulches is available for today's hydro-seeder. Each has properties and performance characteristics that make them best suited to different types of sites. You can customize each to meet your specific site requirements.

PRODUCT	APPLICATION	SLOPE	CONTINUOUS MAX. SLOPE LENGTH* (without slope interruption devices)	CONDITIONS	RATE/LBS PER ACRE
Hydro-Blanket® BFM	Erosion Control	≤ 1:1 ≤ 2:1 ≤ 3:1	75 ft	Critical Sites	4,000 3,500 3,000
Conwed Fibers® 2000	Erosion Control	≤ 2:1 ≤ 3:1 ≤ 4:1	30 ft	Moderate	3,000 2,500 1,500-2,000
Conwed Fibers® 1000	General Seeding	≤ 2:1 ≤ 3:1 ≤ 4:1	28 ft	Moderate	3,000 2,500 1,500-2,000
EnviroBlend® with Tack	General Seeding	≤ 3:1 ≤ 4:1	25 ft	Mild	2,500 1,500-2,000
EnviroBlend®	General Seeding	≤ 3:1 ≤ 4:1	23 ft	Mild	2,500 1,500-2,000
Cellulose with Tack	General Seeding	≤ 4:1	20 ft	Mild	1,500-2,000
Cellulose	General Seeding/ Reclamation/ Straw Tacking	≤ 4:1	18 ft	Mild	1,500-2,000

*Maximum slope length is based on a 4H:1V slope (BFM is 3H:1V). For applications on steeper slopes, the maximum slope length may need to be reduced based on actual site conditions.

The #1 Choice of Hydro-Seeders

More hydro-seeders choose Conwed Fibers® wood and wood/cellulose hydraulic mulches than any other brands.

Conwed Fibers set the standard for erosion control excellence when it began operations in 1965. Our wood-fiber hydraulic mulch stood head and shoulders above all other mulches at that time, and it still does. Continual research, thorough testing at leading universities, and the commitment to remain the premium mulch producer has kept Conwed Fibers on top of the competition for all of these years. And now we've introduced the first wood and blended products with a new flocculating agent that takes hydraulic mulch performance to an even higher level.

Manufacturing advancements have gone hand-in-hand with advancements in Conwed Fibers' ingredients and mulch performance.

New ProPlus SLIKSHOT™ Makes Mulch Shoot Better, Work Better

Conwed Fibers offers the only wood and blend products in the industry with the added value of ProPlus® SlikShot™. It's a proven flocculant that acts as a lubricant to slicken the hose and prevent hose clogs common with competitors' mulches. This innovative, proprietary formulation helps mulch:

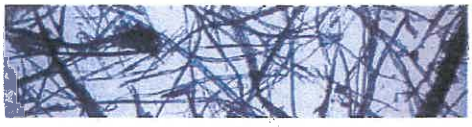
- Shoot easier and farther for improved productivity
- Adhere on impact to provide more uniform ground coverage
- Increase water holding capacity to maximize germination and revegetation
- Increase yield to provide an outstanding value

The addition of SlikShot to our mix is just the latest in a long line of new ingredients designed to deliver optimum performance. No matter what type of mulch – wood, blend or cellulose, our unsurpassed expertise in the industry and commitment to total quality continue to make Conwed Fibers hydraulic mulch second to none.

Superior Fibers Deliver Superior Results for Fewer Callbacks

Nothing illustrates Conwed Fibers superior quality than a comparison of our wood fibers to those of our competitors.

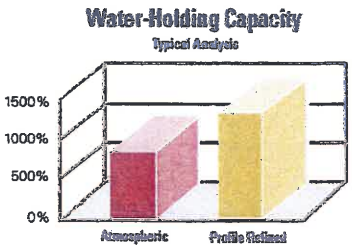
Fibers magnified 45 times by independent lab specializing in fiber analysis.



Conwed Fibers' Thermally Refined wood fiber holds 13.5 times its weight in water to promote faster, more complete germination. Say goodbye to callbacks due to washouts or poor turf establishment.

Competitors use atmospherically refined wood fiber which results in up to 50% less water holding capacity and less yield. It's one reason you need extra bales of competitive mulch to equal the performance of Conwed Fibers.

Thermally Refined® wood fiber holds up to 50% more water than atmospherically refined wood fiber – a critical factor in seed germination.



Thermally Refined wood utilizes heat and pressure that breaks wood down into more fibrous material with greater surface area that results in mulch with:

- Greater yield – reduces the number of bales you buy and load
- Greater coverage – reduces callbacks due to washouts
- Greater water retention – reduces callbacks due to poor turf establishment
- Greater productivity – eliminates clogs from the coarse fiber found in competitive mulches
- Lower total project cost

Ask your Conwed Fibers representative to conduct a side-by-side demonstration that leaves no doubt: Thermally Refined fiber performs better!

The Best Mulch for Any Job

Conwed Fibers' mulch products are ideal for a wide range of applications including turf establishment, golf courses, landfills, highway work, reclamation projects, airports and recreational areas.

Convenient 50-lb Bales

BFM

Hydro-Blanket® BFM

- The industry's leading Bonded Fiber Matrix (BFM) from Profile Products delivers a much higher level of performance than any standard hydraulic mulch or competitive BFM on the market today.
- Independent testing and years in the field prove Hydro-Blanket is effective on the steepest, roughest sites — a critical consideration for Phase II compliance.
- Hydro-Blanket is ideal for projects where blankets are impractical and/or too expensive, and conventional hydraulic mulches are ineffective.
- Produced from Thermally Refined® wood fiber and combined with 10% cross-linked hydrocolloid tackifier, Hydro-Blanket applies more easily, promotes faster germination and minimizes sediment and water runoff. Its performance is comparable to blankets, yet its cost is significantly less.

WOOD

Conwed Fibers wood and wood with tack products are ideal choices for critical sites with up to 2:1 slopes. Contractors report that our Thermally Refined fiber delivers up to 30% more yield than competitive products, which means money in their pockets.

Conwed Fibers® 1000 with SlikShot™

- Contains 100% of the highest quality wood fiber.
- Now with SlikShot for better yield, better shooting and better ground coverage.
- Thermally Refined wood fiber delivers up to 50% more water holding capacity than atmospherically refined wood mulches.

Conwed Fibers® 2000

- 100% wood fiber just like Conwed 1000 but with a premium tackifier included.
- Tackifier is a pre-blended high-viscosity, organic guar-gum tackifier.
- Eliminates the extra step and mess of field mixing.

BLEND

Conwed Fibers' EnviroBlend® and EnviroBlend® with Tack combine 100% Thermally Refined wood fiber with the highest quality cellulose mulch in the industry.

- Delivers up to 15% greater yield to contractors versus competitive blend products.
- Covers up to 20% more ground than cellulose and provides superior erosion control and more complete germination without a big jump in price.

EnviroBlend with SlikShot

- The #1 selling blend in the industry.
- Now with SlikShot for better yield, less hose clogging and better ground coverage.

EnviroBlend with Tack

- Same quality wood and cellulose blend as EnviroBlend but with a pre-blended 3% polymer tackifier for a stronger bond and added holding power.
- Eliminates the extra step and mess of field-mixing tackifier.

CELLULOSE

Conwed Fibers® Cellulose
Conwed Fibers® Cellulose with Tack

- Exclusive defibration process and new manufacturing process improves water holding capacity by 22%.
- Less percentage of fines greatly reduces maché effect.
- High-quality, clean 100% cellulose fiber mixes in water at an accelerated rate and stays in suspension for more uniform consistency.
- Provides erosion control that is superior to straw for nearly the same cost making them ideal for general seeding.
- Darker, richer green color than competing brands gives your work a more professional look from the very beginning.
- Shoots great, allowing hydraulic machinery to run efficiently while providing excellent ground coverage.

Conwed Fibers Cellulose with Tack

- Comes pre-blended with 3% polymer tackifier to increase protection from seed washout and erosion.
- Eliminates the extra step and mess of field-mixing tackifier.

We've Got You Covered

No matter what the site or what the type of hydro-mulch equipment you use, wherever bare soil needs to be covered, Conwed Fibers® has the material best suited to the job. Our complete line provides you with every option you need.

Jet Spray® with FiberMax™ — Pourable Mulch Flakes Save You Time and Money

- Holds more water for enhanced seed germination and more effective erosion control
- Delivers 50% of FiberMax® for greater yield and better coverage, which means you buy and load less material
- Flocculating tackifier helps increase yield and gives the mulch matrix greater loft for more water holding capacity and a stronger bond
- Designed specifically for the smaller tank openings of jet-agitated hydraulic machines, loads up to 90% faster than traditional hydraulic mulch
- Increases productivity while delivering professional results

Seed Aide®— Perfect for Small Jobs

- Expanding cellulose/wood fiber mulch granules are ideal for small areas
- Can be applied with a high volume drop spreader, large-opening broadcast spreader or by hand
- Great leave behind for touch ups after hydro-seeding to help eliminate callbacks
- Tests prove that granular properties and texture result in greater water absorption and soil coverage than competing brands for superior seed protection
- Organic tackifier reduces soil erosion, water runoff and seed washout

Futerra® Revegetative Blankets

- Futerra® F4 Netless® and EnviroNet® blankets are proven to keep soil in place with 99.9% effectiveness, providing better slope protection with faster, thicker vegetative establishment than traditional blankets and nets
- Designed to minimize danger to wildlife or maintenance equipment
- Costs less than half the price of installed sod, including seed and fertilizer
- Takes just one man-hour to lay 3,000 square feet of Futerra versus one man-hour to lay 500 square feet of sod
- Improves site logistics—one truckload of Futerra EnviroNet covers eight acres, compared to a truckload of sod that only covers one-quarter of an acre

So Effective, It's Almost Perfect

	C-Factor[1]	Effectiveness Rating	Soil Loss/ Plot[2]
Futerra® F4 Netless®	0.001	99.9%	0.4 lb
Futerra® EnviroNet®	0.003	99.7%	1.4 lb
Single-Net Straw Blanket	0.073	92.7%	28.9 lb
Single-Net Excelsior Blanket	0.075	92.5%	29.8 lb
Bare Soil Control	1.000	0.0%	397.0 lb

[1]Test Conditions — UWRL Rainfall Simulator, Slope Gradient — 2.5H:1V Soil Type — sandy loam, Rainfall Event — 5"/hr, Test Duration — 1 hr
[2]Plot size 4' by 19.5'

Superior Germination

Futerra® Revegetative Blankets are ideally suited for areas where conventional practices are inadequate for establishing rapid and uniform vegetation. Through its patented design, Futerra is capable of absorbing and holding more water, thereby creating a moisture reservoir that ensures improved germination—nearly double that of straw!

Get all the Facts

Log on to www.profileproducts.com.

Put Added Value in Every Tank with ProPlus® Hydro Mulch® Solutions

Conwed Fibers® offers you the industry's most comprehensive line of hydraulic mulch additives to achieve maximum performance under virtually every condition. These accessory products are specifically designed to solve real-world seeding challenges that contractors face every day. Your Conwed Fibers distributor can help you analyze site conditions and recommend the best mix for the job. ProPlus® hydraulic mulch additives include:

Soil Amendments

NEW • **Aqua-pHix™ Hydro** – Proprietary liquid formula of non-hazardous and non-corrosive, self buffering, chelated organic and inorganic acids that immediately lower pH of alkaline soils. Dramatically enhances seed germination.

Packaging: 2-2.5 gal jugs per case

NEW • **JumpStart™** – Proprietary liquid reformulation with long-term penetrating agent added to humic acid and beneficial bacteria solution. Proven to promote faster germination and vegetation establishment.

Packaging: 2-2.5 gal jugs per case

NEW • **BioPrime™** – Granular formulation containing biostimulant, 18-0-0 slow release nitrogen, humic acid and Endo Mycorrhizae. Designed to sustain long-term plant vitality.

Packaging: 40-lb bag

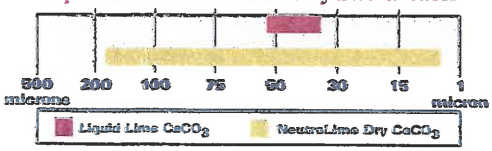
• **NeutraLime™ Dry** – Nothing balances soil pH faster – within 6-10 days of application – with the added plus of longer control – up to 18 weeks. Contains 50% more active ingredients than liquid lime.

Packaging: 4-10 lb bags per case, 40-lb bag

• **NeutraLime™ Liquid** – Balances soil pH and is effective in 7-10 days.

Packaging: 2-2.5 gal jugs per case

Liquid Lime vs NeutraLime Dry Effectiveness



Graduated particle sizing extends minimum effectiveness from 12 to 18 weeks.

• **JumpStart™ 5** – Jump start turf establishment with the industry's most complete package of growth stimulants and added polymers.

Packaging: 4-10 lb bags per case, 40-lb bag

• **AquaGel™ A, B, C, D** – Four ways to hold 400 times the water in a variety of applications, making it an excellent water management tool.

Packaging: 6-5 lb pails per case (A and C only), 2-16 lb jugs per case, 25-lb bag and 50-lb drum

Fiber Mulch Amendments

• **FiberBond Ultra™** – Enhances the performance of hydraulically applied fiber mulch materials.

Packaging: 4-7.5 lb bags per case

• **FiberMax™** – Maximize yield and mulch performance with a stronger bond and the added plus of better shooting.

Packaging: 6-5 lb bags per case

• **FiberLock™** – Patented, crimped fibers are your key to increased yield and sure success on the really long slopes.

Packaging: 10-lb case

• **SlikColor™** – The only dye marker with the added plus of a slickifier to improve shooting – now in water soluble bags.

Packaging: 2-11 lb jugs per case, 11-1 lb bags per case (water soluble bags)

Soil Stabilization & Dust Control

• **TackDown™** – The binder you need to make sure you've got the job nailed.

Packaging: 2-2.5 gal jugs per case, 250 gal tote

• **FlocLoc™ (PAM) Dry** – A flocculating soil stabilizer that coagulates suspended soil particles, dropping them from runoff. It reduces soil erosion and improves water infiltration into the seedbed.

Packaging: 6-3 lb jugs per case, 40-lb pail

Tackifiers

• **ConTack®** – 100% guar-based organic tackifier reduces the need for reseeding and minimizes soil erosion by stabilizing mulch and straw. It also helps increase the flow and pumping properties of mulch.

Packaging: 8-5 lb bags per case, 50-lb bag

• **ConTack® AT** – A starch-based agricultural tackifier, ConTack AT is an economical choice for tacking straw or hay mulch to enhance germination by holding seed in place and preventing washouts.

Packaging: 50-lb bag

• **Tacking Agent 3®** — Requires no cure time to be effective! University tests and field use prove it effectively reduces soil erosion and water runoff immediately after hydro-seeding. Also increases the water holding capacity of all types of hydraulic mulches.

Packaging: 4-8 lb bags per case, 25- and 50-lb bag, 7-3 lb bags per case (water soluble bags)

• **MPT™ Tack** — A combination of poly-acrylamide and hydro-colloid polymers, MPT is highly viscous and dries to form a strong chemical bond. Ideal for fiber mulch binding, straw and hay mulch tacking.

Packaging: 4-12 lb bags per case, 50-lb bag

Please refer to the ProPlus brochure for specific application rates and conditions.

Conwed Fibers® • www.conwedfibers.com • 800-508-8681 • Fax 847-215-0577

PROFILE Products LLC • 750 Lake Cook Road • Suite 440 • Buffalo Grove, IL 60089

CF-12
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CONWED FIBERS®

RESPONSE ACTION
SOIL SAMPLING AND ANALYSIS PLAN

FOR THE
EXIDE TECHNOLOGIES UNDEVELOPED BUFFER PROPERTY
FRISCO, COLLIN COUNTY, TEXAS

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APRIL 1, 2014

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1.0 OBJECTIVE

This Soil Sampling and Analysis Plan (Plan) has been prepared to describe sampling and analysis methods and procedures to be used in conjunction with response action activities consisting of removal of certain affected soils at the Exide Technologies Undeveloped Buffer Property (the Site), in Frisco, Texas. Removal of this soil is being conducted based on the results of the affected property assessment performed for the Site as part of Texas Commission on Environmental Quality (TCEQ) VCP Project No. 2541. The objective of this Plan is to describe the procedures for soil sampling and analysis to be conducted as part of the response action activities. Two types of sampling and analytical activities will be performed, 1) discrete confirmation samples will be collected from the base and sidewalls of the remediated areas to confirm that residual concentrations are within remediation goals; and 2) composite samples will be collected from excavated soils for waste classification purposes. Soils will initially be removed to the depth indicated by the data collected as part of the affected property assessment. The excavated area will be screened using a X-ray fluorescence meter (XRF) to identify areas potentially requiring additional excavation. Post-excavation confirmation samples will be collected for laboratory analysis following removal of the soils. Excavated soils will be stockpiled, and samples collected and analyzed, to characterize the material for disposal. Based on previously collected Toxicity Characteristic Leachate Procedure (TCLP) data, soil excavated from areas containing concentrations of lead greater than 3,000 mg/kg, will be placed in roll off containers to segregate it from other soils. Material placed in the roll off containers will be analyzed to characterize the material for disposal.

2.0 BACKGROUND

The Undeveloped Buffer Property (the Site) consists of 13 tracts of vacant land totaling approximately 170 acres surrounding the former Exide Technologies Frisco Recycling Center (Former Operating Plant, FOP). The Exide Technologies (Exide) FOP recycled lead-acid batteries and operated as lead smelter until late November 2012. The FOP is located at 7471 South Fifth Street in Frisco, Collin County, Texas. The Site was used for agricultural purposes since the early 1900s. With the exception of a demolished residential structure and two barns in various states of deterioration, no buildings or other improvements are present at the Site. The majority of the Site is vacant land/fields with limited areas of dense vegetation. Segments of Eagan Way and former 5th Street are also located within the Site.

Investigation activities conducted at the Site in 2012 and 2013 identified soils containing lead at concentrations exceeding an assessment level of 250 mg/kg present at areas of the Site near the FOP and along the former South 5th Street south of the facility. Cadmium concentrations at the Site were not found to exceed the TRRP residential cadmium assessment level. Elevated lead concentrations observed in the upper few inches of soil are presumed to be associated with atmospheric deposition of lead from the adjacent FOP. Elevated lead concentrations in soil from an undetermined source in areas along the former South 5th Street extend to slightly greater depths (1-2 feet below ground surface, top of bedrock). On-site surface soil in an area adjacent to the former Circuit Fab facility (located off-site) contains elevated concentrations of copper, assumed to be related to runoff from past firefighting at the Circuit Fab facility in 1988. An on-site area adjacent to Parkwood Drive contains debris (e.g., broken concrete, asphalt) with lead concentrations exceeding the assessment level.

3.0 SAMPLE LOCATIONS, FREQUENCY, EQUIPMENT AND PROCEDURES

3.1 Post-Excavation Confirmation Sampling

Lead-affected soils will be excavated from the impacted areas and stockpiled on plastic near the excavation area. A hand-held XRF meter will be used as a screening tool to evaluate lead concentrations in remaining soil. Any areas potentially containing concentrations of lead >250 mg/kg will be further excavated. When excavation is considered complete, post-excavation confirmation samples will be collected for laboratory analysis to confirm that remaining soils do not contain lead at concentrations exceeding the response action objective of 250 mg/kg or cadmium exceeding the critical PCL of 52.4 mg/kg.

Specific sample locations will be determined in the field and will be dictated by the conditions in the excavated area. Sample locations will be chosen in a manner to achieve the most representative sample in the sample area. Sample locations will be marked with a stake, pin-flag or other marking device so that the location can be recorded. Sample information will be recorded in a field log at the time of collection and will include the sample ID, date and time of collection, and any applicable notes regarding the sample (i.e., bedrock, waste/debris present).

Post-excavation confirmation samples will be collected from the upper few inches of the base of each excavation area at a frequency of one sample for each 2,500 square foot area (approximately 50 x 50 feet). In areas where excavation is completed to bedrock/limestone, the base confirmation samples will be collected by breaking up pieces of the bedrock to be pulverized and analyzed. Confirmation samples will also be collected from the ground surface (0-3 inches) along the sidewalls of shallow excavations (0-1 ft) at a frequency of one sample per 100 linear feet of sidewall or on each of the four sides for smaller excavations. Confirmation samples will be collected from the sidewalls of deeper excavation at approximately one-half of the excavation depth.

Post-excavation confirmation samples will be collected using hand tools such as a trowel or shovel. Samples will be collected from the upper few inches of soil in the base of the excavation, or ground surface for excavation perimeter samples. If samples are to be split with another party, the soil will be placed into a zip-loc bag for homogenizing before being placed in the sample containers. Sampling equipment will be decontaminated between each use by removing any

gross soils, washing the tool with a phosphate-free detergent solution, and then rinsing with tap water followed by rinsing with de-ionized/distilled water.

3.2 Stockpile Sampling

Excavated soils will be staged on plastic sheeting (minimum 6 mil thickness) in approximately 250 cubic yard stockpiles (an area of approximately 30 x 30 feet) adjacent to the excavation area. As a result of the excavation, transfer and stockpiling process, excavated material will be thoroughly mixed prior to placement in stockpiles. Samples of the excavated material will be collected from the stockpiles for the purpose of waste characterization/classification. A composite sample will be collected from the stockpiled material at a frequency of approximately one sample for every 250 cubic yards of material (each stockpile). A five-part composite sample will be collected directly from the loose stockpile using a gloved hand and/or decontaminated/disposable soil sampling equipment (e.g., trowels). Soil will be collected from the upper 12 inches of each stockpile at five separate, random, representative areas and combined in a large plastic bag. The material will then be homogenized and a sub-sample will be placed in laboratory-supplied sample jars, labeled with the sample identification, date, and time of collection.

Sampling equipment will be decontaminated between each use by removing any gross soils, washing the tool with a phosphate-free detergent solution, and then rinsing with tap water followed by rinsing with de-ionized/distilled water. No field QA/QC samples are proposed to be collected as part of the stockpile sampling activities.

3.3 Roll Off Container Sampling

Soils excavated from areas along former South 5th Street where lead concentrations greater than 3,000 mg/kg were observed during the Site investigation activities will be placed in roll off boxes to segregate the material for testing and disposal. Preliminary Toxicity Characteristic Leaching Procedure (TCLP) test results performed on in-situ soil samples are presented on Table A2-1 in Appendix 2. These data suggest that soil containing lead concentrations greater than 5,000 mg/kg may be characteristically hazardous based on the potential for lead to leach from the soil. A value of 3,000 mg/kg is used as a conservative criterion for segregating excavated soils potentially requiring disposal as hazardous material.

Each roll off box will contain approximately 10 to 12 cubic yards of soil. A composite sample will be collected from the roll off box material at a frequency of one sample per roll off box. The process of excavating and loading the soils into the roll off boxes will sufficiently mix the soil such that material collected from the surface of the roll off box is representative of the contents of the box. A five-part composite sample will be collected directly from the loose/surface material using a gloved hand and/or decontaminated/disposable soil sampling equipment (e.g., trowels). These discrete samples will be combined directly into a sampling container (e.g., jar or bag) and will then be thoroughly mixed prior to placement in a pre-cleaned, laboratory-supplied glass soil sample jar.

Sampling equipment will be decontaminated between each use by removing any gross soils, washing the tool with a phosphate-free detergent solution, and then rinsing with tap water followed by rinsing with de-ionized/distilled water.

3.4 Quality Assurance/Quality Control

One stockpile sample field duplicate and one verification sample field duplicate will be collected for each day those types of samples are collected. An equipment blank sample will be collected from the decontaminated sampling equipment (e.g., trowels) used for verification sampling each day verification samples are collected (using reusable equipment). No equipment rinsate sample will be collected in conjunction with stockpile or roll off box sampling.

4.0 SAMPLE DESIGNATION

The sample identification system for the project has been designed to uniquely identify each sample location and sample. The numbering system utilizes the existing grid layout implemented for the affected property assessment and includes the sampling grid, an identifier for sample type (confirmation or waste classification), and QA/QC identifier if applicable. Sample identification will use the following format:

X-X #-# Where X-X represents the grid cel i.e., M-17 and #-# represents the sample ID i.e., CS-1. Sample ID M-17 CS-1 would represent post-excavation confirmation sample 1 in grid M-17.

Potential sample ID's include "CS" for post-excavation confirmation samples, "SP" for stockpile samples, and "RO" for samples collected from roll off boxes. Additional identifiers may be appended to the sample ID to indicate a field QA/QC sample, a specific sample depth, or a second sample from the same location following additional excavation.

Sample locations will be marked at the time of sampling and the coordinates of the sample locations recorded using a differential GPS.

5.0 SAMPLE HANDLING AND LABORATORY ANALYSIS

5.1 Post-Excavation Confirmation Samples

5.1.1 Sample Handling and Analysis

Following sample collection, sample jars will be placed in boxes or ice chests and handled under chain-of-custody procedures. Samples will be delivered to the analytical laboratory by sampling personnel, courier, or overnight delivery service. Post-excavation samples collected from areas impacted by lead will be analyzed for lead and cadmium. Post-excavation samples collected from the area affected by copper will be analyzed for copper. Samples will be analyzed using EPA Method 6010B/6020A. Since the samples will be analyzed for lead, cadmium or copper only, no preservation is required (i.e., no ice required in the coolers). The holding time for the selected metals is 6 months.

5.1.2 Quality Assurance/Quality Control

One field duplicate sample will be collected per 20 samples. One equipment blank sample will be collected from the non-disposable equipment each day samples are collected (if used). Analytical data will be evaluated for usability in accordance with the procedures described in TRRP guidance document, *Review and Reporting of COC Concentration Data* (RGG-366/TRRP-13) and for adherence to project objectives. The results of the data usability evaluation will be included in the Response Action Completion Report (RACR) to be submitted upon completion of the response action.

5.2 Stockpile and Roll Off Samples

Following sample collection, sample jars will be placed in boxes or ice chests and handled under chain-of-custody procedures. Samples will be delivered to the analytical laboratory by sampling personnel, courier, or overnight delivery service. The stockpile or roll off samples will be analyzed for the RCRA 8 metals in TCLP extract using EPA Method 1311 TCLP and 6010B/6020A (metals concentrations). Since the samples will be analyzed for TCLP metals only, no preservation is required (i.e., no ice required in the coolers). The holding time for the selected metals is 6 months. Material to be disposed of at a facility other than the on-site Class 2 landfill

may be analyzed for additional constituents to meet the characterization requirements of the specific disposal facility.

6.0 WASTE CHARACTERIZATION AND CLASSIFICATION PROCEDURES

Samples collected from soil stockpiles and roll off boxes will be evaluated to determine the waste classification of the material. The results of the TCLP metals analyses will be compared to the EPA criteria for characteristically hazardous waste to determine whether the waste is hazardous. The results of the TCLP metals analyses will also be used to determine the classification of the waste for disposal. Waste classification will be determined using the following TCLP criteria:

	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Hazardous (mg/l)	≥5	≥100	≥1	≥5	≥5	≥0.2	≥1.0	≥5
Non-haz Class 1 (mg/l)	NA	NA	0.5 - <1	NA	1.5 - <5	NA	NA	NA
Non-haz Class 2 (mg/l)	<1.8	<100	<0.5	<5	<1.5	<0.2	<1	<5

There is no hazardous characterization criterion for copper affected soils.