In-Situ Thermal Treatment Remedial Action Completion Report

Frontier Fertilizer Superfund Site

Davis, California

Approved By:

September 11, 2015

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Date

In Situ Thermal Treatment Remedial Action Completion Report Frontier Fertilizer Superfund Site

Prepared for

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Executive Summary

This Report documents the operation and post-operation data from the in situ thermal treatment (ISTT) activities at the Frontier Fertilizer Superfund Site in Davis, California. An ISTT system operated from March 2011 to October 2012 to treat contaminated soil and groundwater. When subsurface temperatures allowed, the treatment volume was sampled in August and September 2013. This work was performed by CH2M HILL for the U.S. Environmental Protection Agency (EPA) under EPA Contract No. EP-S9-08-04/ Task Order 007.

Background and Objectives

ISTT was selected as one of the remedies for groundwater and soil in the Record of Decision (ROD). The former pesticide distribution facility contained five contaminants of concern (COCs) in soil and groundwater: 1,2-dibromo-3-chloropropane (DBCP); 1,2-dibromoethane (ethylene dibromide [EDB]); 1,2-dichloropropane (DCP); carbon tetrachloride (CCl_4); and 1,2,3-trichloropropane (TCP). ISTT was applied to the source zone which only contained the pesticide COCs (no CCl_4 in the source zone). The soil and groundwater cleanup goals, or Remedial Action Objectives, are listed in Table ES-1.

TABLE ES-1
Remedial Action Objectives
Frontier Fertilizer Superfund Site, Davis, California

Contaminant of Concern	Soil Cleanup Values (µg/kg)[a]	Groundwater MCL (µg/L)
DBCP	1.2	0.2
1,2-dibromoethane (EDB)	0.18	0.05
1,2-DCP	20	5
CCl_4	90[b]	0.5[c]
1,2,3-TCP	2.5	0.5[d]

[a] Soil depth to 10 feet below ground surface for protection of groundwater.
[b] CCl_4 has not been detected in source zone soil in past investigations.
[c] California maximum contaminant level (MCL), which is more stringent than the federal MCL.
[d] Detection limit for TCP; there is no MCL for TCP.

Notes:

µg/kg = microgram(s) per kilogram
µg/L = microgram(s) per liter
MCL = maximum contaminant level

The objective of the remedial action was to remove contaminants from the subsurface that are a continuing source of groundwater contamination by heating the soil using electrical resistance heating (ERH) to temperatures of 90 ±10 degrees Celsius (°C) in the unsaturated zone less than 10 feet below ground surface (bgs), 95 ±5°C in the unsaturated zone 10 feet bgs and deeper, and to the boiling point of water or more than 100°C in the saturated zone. Vapor and liquids from the heated soil were captured and treated by an aboveground treatment system before being discharged to the air or sanitary sewer, respectively.

ISTT Design

The ISTT design covered about 26,719 square feet and 52,478 cubic yards, with treatment depths ranging from 40 to 80 feet bgs. In total, the treatment volume contained 111 electrodes with final depths of 40, 60, or 80 feet bgs. Each electrode setup was outfitted with soil vapor and/or liquid extraction mechanisms.

In addition, 128 shallow electrodes, also known as puppy electrodes, were installed where treatment was required for shallow soils less than 10 feet bgs. Nineteen temperature monitoring wells (TMWs) were designed in the treatment volume to monitor heating performance. Due to power limitations the site was treated in three stages. The electrode layout and stages are shown on Figure ES-1.

ISTT Operations

ISTT operation was conducted from March 6, 2011 through October 12, 2012; the timeline of ISTT-related activities is presented in Table ES-2. System measurements and analytical data were collected during operation. The ISTT system extracted vapors from beneath the cap and electrode wells. The aboveground treatment system cooled and separated vapor and liquid streams, then treated each stream by adsorbing COCs on activated carbon. Throughout treatment a total of 79.4 pounds (lbs) of COCs, which were predominantly DCP (52.5 lbs) and TCP (23.0 lbs), were removed from the source zone and treated (Figure ES-2). In addition to captured COCs there was some evidence that in-situ hydrolysis occurred and increased the amount of COCs treated.

TABLE ES-2
Chronology of Events
Frontier Fertilizer Superfund Site, Davis, California

Activity	Date
ISTT PMP installation and pre-heating soil sampling [a]	October 10, 2008 – November 18, 2008
Groundwater samples collected from PMPs [a]	December 2, 2008 – December 10, 2008
ISTT electrode installation	September 21, 2009 – December 15, 2009
ISTT system installation	July 19, 2010 – March 3, 2011
ISTT Stage 1 operation	March 6, 2011 – November 8, 2011[b]
ISTT Stage 2 operation	July 15, 2011 – March 15, 2012
ISTT Stage 3 operation	January 13, 2012[c] – October 12, 2012
ISTT SVE terminated	October 26, 2012
ISTT aboveground system removal completed	January 3, 2013
Post-heating sampling conducted (groundwater and soil)	August 19, 2013 – September 13, 2013
Electrode well field destruction and cap, fence removal	June 2, 2014 – December 19, 2014

[a] These activities reported in *In Situ Thermal Treatment Phase 3 Preliminary Monitoring Point Installation Frontier Fertilizer Superfund Site* (CH2M HILL, 2009).

[b] Stage 1 was effectively completed October 18, 2011; however, regulator concerns about two electrodes (C5 and C6) continued operations almost a month longer.

[c] Stage 3 operations were expedited to start heating deep electrodes while Stage 2 treatment was still ongoing.

Note:

PMP = preliminary monitoring point

The ISTT used nearly 7,000,000 kilowatt-hours (kWh) of power, with a power density around 133 kWh per cubic yard.

Throughout ISTT operation ambient air monitoring was conducted (up to twice per week) to determine potential risks to the nearby residents. No COCs were detected above protective levels in ambient air samples; over 500 ambient air samples were collected.

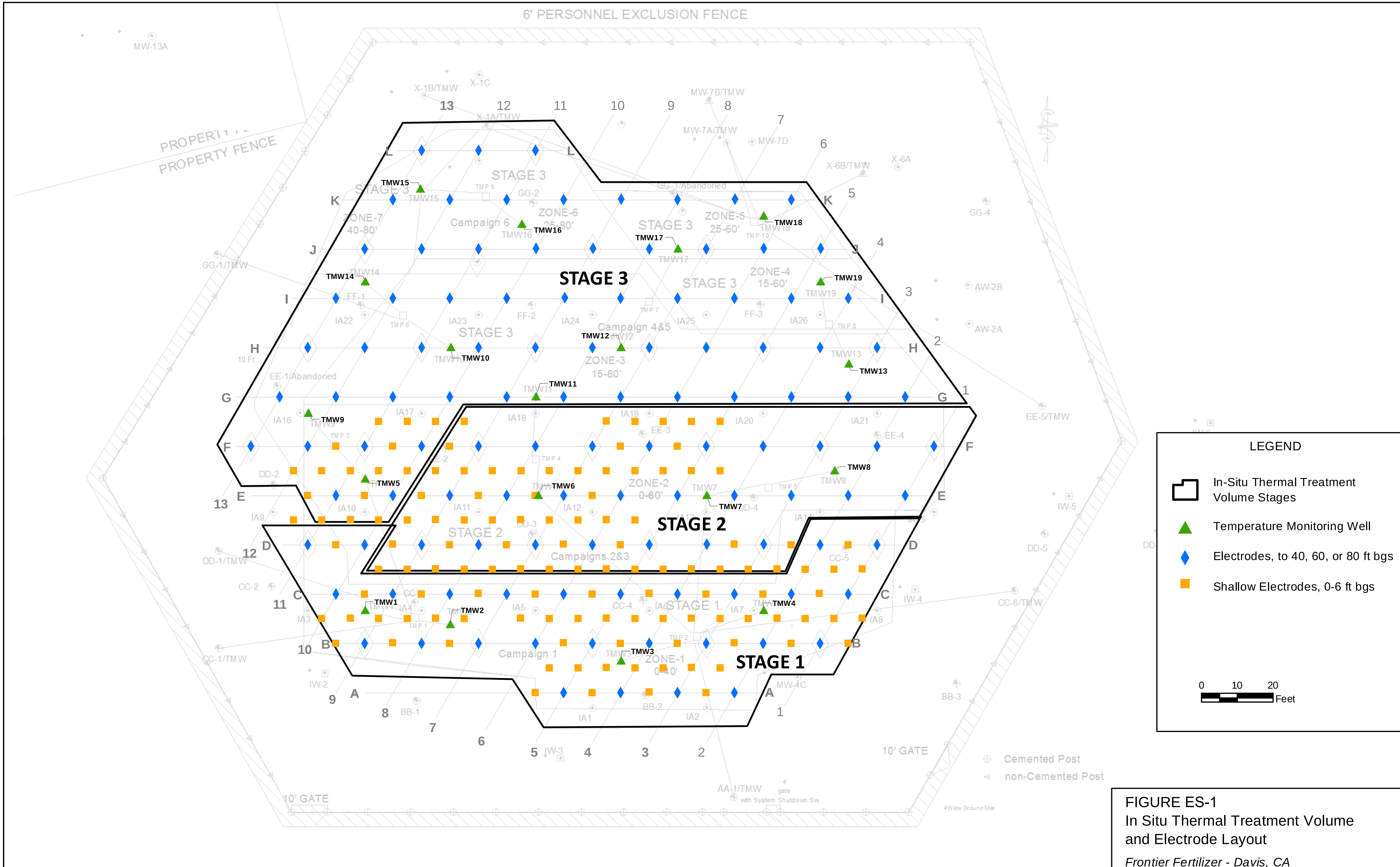

FIGURE ES-1
In Situ Thermal Treatment Volume and Electrode Layout
Frontier Fertilizer - Davis, CA

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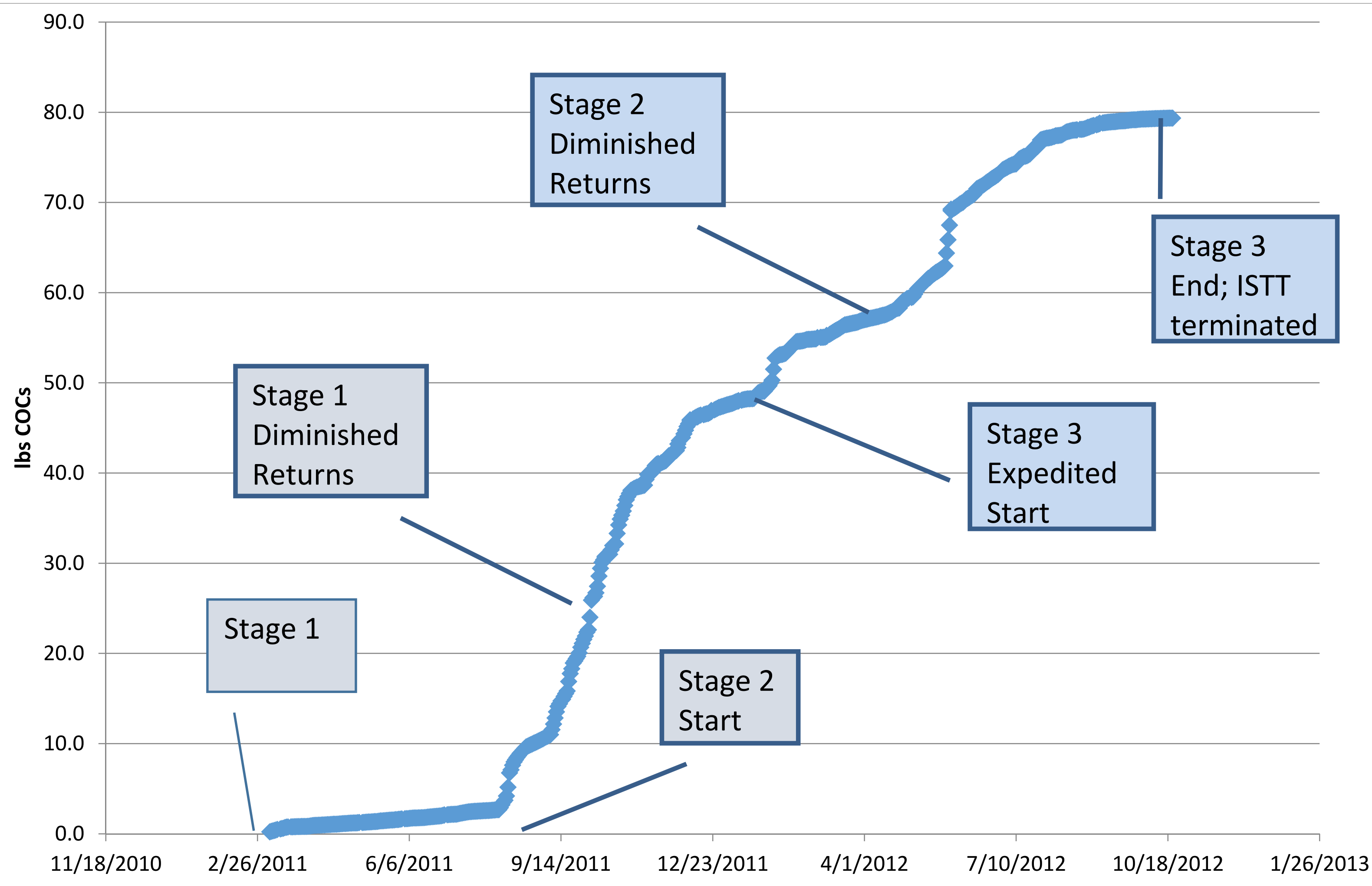

FIGURE ES-2
Cumulative COC Mass Removal
Frontier Fertilizer - Davis, CA

Post-ISTT and Conclusion

At the completion of ISTT, the site required 10 months of cooling to reach safe temperatures for sampling. Groundwater samples were collected from 26 wells and soil samples were collected from 102 locations. Sample results from inside the ISTT volume were below remedial action objectives for soil and groundwater. Groundwater concentrations were reduced by as much as 99.99 percent. Calculations of pre- and post-treatment COC mass in the ISTT treatment volume indicate an over 95 percent reduction. The ISTT was effective at remediating 52,478 cubic yards of soil and groundwater to the Remedial Action Objectives. Wells north, or downgradient, of the ISTT volume have reduced COC concentrations that may continue to decline now that the source of mass has been reduced.

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F ISTT Closure

Acronyms and Abbreviations

°C	degree(s) Celsius
µg/kg	microgram(s) per kilogram
$\mu g/m^3$	microgram(s) per cubic meter
µg/L	microgram(s) per liter
bgs	below ground surface
CCl_4	carbon tetrachloride
CES	Current Environmental Systems
CLP	Contract Laboratory Program
COC	contaminant of concern
CPVC	chlorinated polyvinyl chloride pipe
DBCP	1,2-dibromo-3-chloropropane
DCP	dichloropropane
DQO	data quality objective
DTSC	Department of Toxic Substances Control
DVE	dual-phase vapor extraction
EDB	ethylene dibromide (1,2-dibromoethane)
EPA	U.S. Environmental Protection Agency
ERH	electrical resistance heating
FFSOG	Frontier Fertilizer Superfund Oversight Group
FRP	fiberglass reinforced pipe
GAC	granular activated carbon
HDPE	high-density polyethylene
HVOC	halogenated volatile organic compound
IDW	investigation-derived waste
ISTT	in situ thermal treatment
lbs	pound(s)
kWh	kilowatt-hour(s)
MCL	maximum contaminant level
MEK	methyl ethyl ketone
mL	milliliter(s)
msl	mean sea level
mV	millivolt(s)
MW	megawatt(s)

NTU	nephelometric turbidity unit
ORP	oxidation reduction potential
P&ID	process and instrumentation diagram
PID	photo-ionization detector
PMP	preliminary monitoring point
PSU	power supply unit
QA	quality assurance
QC	quality control
RAL	residential action level
RAMP	Remedial Action Management Plan
RAO	remedial action objective
ROD	record of decision
SAP	Sampling and Analysis Plan
scfm	standard cubic feet per minute
STLC	soluble threshold limit concentration
SVE	soil vapor extraction
TCP	trichloropropane
TMW	temperature monitoring well
TVOL	trace volatiles
VOC	volatile organic compound
VP	vapor pressure
Water Board	Regional Water Quality Control Board

SECTION 1
Introduction

This Report documents the operation and post-operation data from the in situ thermal treatment (ISTT) activities at the Frontier Fertilizer Superfund Site in Davis, California. An ISTT system operated from March 2011 to October 2012 to treat contaminated soil and groundwater. When subsurface temperatures allowed, the treatment volume was sampled in August and September 2013. This work was performed by CH2M HILL for the U.S. Environmental Protection Agency (EPA) under EPA Contract No. EP-S9-08-04/ Task Order 007.

The purpose of this Remedial Action Completion Report is to document completion of the ISTT remedial action for source area soil and groundwater at the Frontier Fertilizer Superfund Site in Davis, California. The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) identification number for this site is CAD071530380. This Remedial Action Report has been prepared consistent with EPA guidance entitled *Close Out Procedures for National Priorities List Sites* (EPA, 2011).

1.1 Site Description

The Frontier Fertilizer Superfund Site occupies approximately 18 acres at 3901 Second Street in Davis, Yolo County, California (Figure 1-1). The Frontier Fertilizer Superfund Site includes a triangular 11.43-acre parcel (Assessor's Parcel Number 071-412-031, owned by Pine Tree Properties) and an adjacent 7-acre parcel (part of a 10.98-acre parcel, Assessor's Parcel Number 071-411-07) that is known as the "Remainder Parcel." The National Superfund Database Number (CERCLIS) is CAD071530380. The geographic coordinates of the site are 38° 3' 9.5" N latitude and 121° 42' 7.0" W longitude (Township 8 North, Range 2 East, Section 12, Mt. Diablo Baseline and Meridian, Davis, California, 7.5-minute quadrangle).

1.1.1 Location and History

The site is in an area zoned for light industrial/business park use at the eastern edge of Davis, California. The site is bounded on the south and east by Second Street, on the north by the Mace Ranch Industrial Park, and on the west by two metal buildings and the new Mace Ranch Industrial Park. The nearest residence is approximately 600 feet north of the pesticide source zone.

The site was first developed in the 1950s as an area for storing agricultural equipment. Other activities that may have occurred, based on descriptions of the facilities, include tomato grading, grain storage, equipment maintenance, and labor housing. In the 1970s, 4 acres at the west end of the triangular parcel were used to store, mix, and distribute pesticides and fertilizer for local agricultural use. Pesticide handling was discontinued during the 1980s when toxic levels of pesticides were discovered in wastewater that had been placed in an unlined disposal basin. The unlined basin was in the portion of the site known as the pesticide source zone. Warehouses, shops, a pole barn, a labor camp complex, and a tomato grading station have been removed from the site.

1.2 Remedial Action Objectives

Remediation of the Frontier Fertilizer site includes reducing the concentration of contaminants of concern (COCs) in the soil and groundwater to thresholds established in the Record of Decision (ROD). The site ROD, issued in September 2006, lists remedial action objectives (RAOs) for five COCs, as shown in Table 1-1 (EPA, 2006).

TABLE 1-1
Remedial Action Objectives
Frontier Fertilizer Superfund Site, Davis, California

Contaminant of Concern	Soil Cleanup Values (µg/kg)[a]	Groundwater MCL (µg/L)
DBCP	1.2	0.2
1,2-dibromoethane (EDB)	0.18	0.05
1,2-DCP	20	5
CCl_4	90[b]	0.5[c]
1,2,3-TCP	2.5	0.5[d]

[a] Soil depth to 10 feet below ground surface for protection of groundwater.
[b] CCl_4 has not been detected in source zone soil in past investigations.
[c] California maximum contaminant level (MCL), which is more stringent than the federal MCL.
[d] Detection limit for TCP; there is no MCL for TCP.

Notes:

µg/kg = microgram(s) per kilogram
µg/L = microgram(s) per liter
CCl_4 = carbon tetrachloride
DBCP = 1,2-dibromo-3-chloropropane
DCP = dichloropropane
EDB = ethylene dibromide
MCL = maximum contaminant level
TCP = trichloropropane

1.3 Selected Remedy

The selected remedy at Frontier Fertilizer is a permanent solution that includes treating groundwater and soil contaminated with COCs to achieve RAOs. This Report documents the in situ heating portion of the remedy. The major components of the selected remedy are as follows:

- In situ (in place) heating using electrical energy to heat source area soil and groundwater up to 60 to 90 feet below ground surface that are a continuing source of groundwater contamination. Vapor controls include ambient air monitoring and an impermeable layer of plastic over the source area. Soil vapor generated is collected, treated, and monitored.
- Continued operation of groundwater pump-and-treat system. Groundwater extraction and treatment will continue until monitoring indicates that the RAOs are achieved. The monitoring will also determine if additional pumping (extraction) wells or monitoring wells, or modifications to the system are necessary.
- Possible secondary enhanced anaerobic biological treatment of the source area to treat nitrate based on the following evaluation planned for the design phase. This evaluation will include a comparison of nitrate levels in Site groundwater and City monitoring/drinking water wells in addition to discussions with the City of Davis to determine whether any changes are anticipated for the Site’s nitrate discharge requirements.
- Institutional Controls to prevent exposure to soil above acceptable cleanup levels and to prevent exposure to contaminated groundwater.
- Wood chip, pavement, or gravel cap to prevent ecological receptors from contacting surface soil.

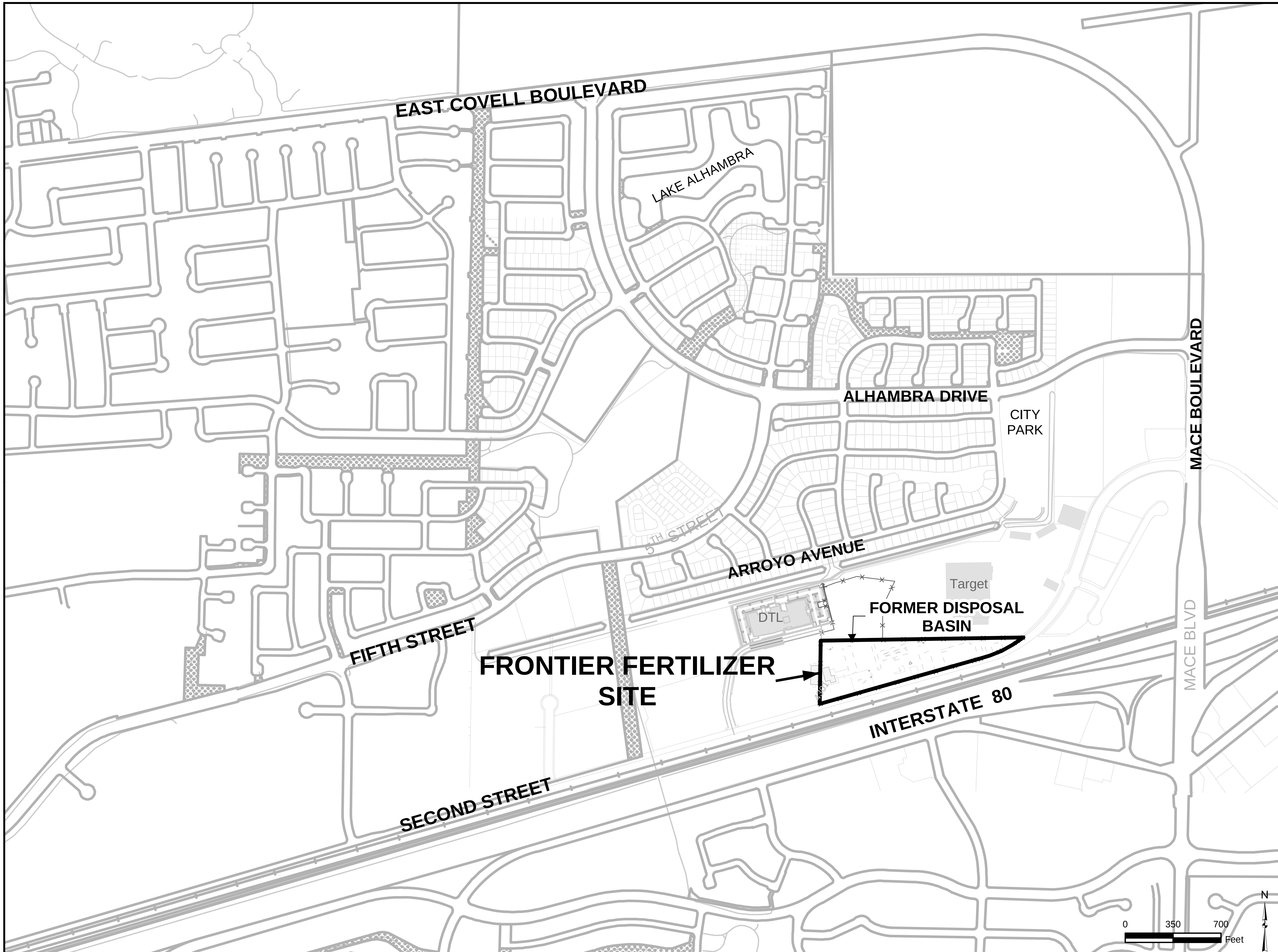

FIGURE 1-1
SITE LOCATION MAP
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\\ZION\SACGIS\SACGIS\FRONTIER\MXD\FIGURE1-1_SITELOCATIONMAP.MXD SSCOPES 3/5/2009 13:57:06

1.4 Document Description

This Report documents ISTT installation activities. The Report is organized as follows:

- **Section 1** presents a site description and the purpose of the document.
- **Section 2** presents the ISTT activity objectives.
- **Section 3** presents the ISTT activities performed.
- **Section 4** presents the ISTT results.
- **Section 5** presents the post-ISTT objectives and activities performed.
- **Section 6** presents the post-ISTT results.
- **Section 7** presents ISTT performance data.
- **Section 8** presents decommission plans.
- **Section 9** presents conclusions and recommendations.
- **Section 10** presents reference information for all works cited in this Report.

SECTION 2
ISTT Objectives

The selected remedy for the source area from the Frontier Fertilizer ROD was heating source area soil and groundwater in situ up to 60 to 90 feet below ground surface (bgs). The objective of this action was to remove contaminants from the subsurface that are a continuing source of groundwater contamination. Additional heating-related activities included ambient air monitoring and soil vapor collection and treatment.

Procurement of an ISTT vendor to design, construct, and operate an ISTT system began in 2007, with selection occurring in 2008. The treatment system design proceeded with 10%, 30%, 60%, 90% and 100% designs. The 60% design was a presentation to stakeholders. Due to a lack of adequate power availability from the local utility provider to treat the entire target treatment volume at once, a design addendum that presented a phased treatment approach was produced after the 100% design. The completed design package and addendum is contained in the Final Remedial Action Management Plan (RAMP) (CES, 2010). The RAMP contained the following design packages and implementation plans:

- ISTT Design
- ISTT Design Addendum
- Site Management Plan

Additional ISTT implementation plans that were produced included the ISTT Sampling and Analysis Plan (CH2M HILL, 2011a) and the Air Monitoring Work Plan (CH2M HILL, 2011b). The State of California (Department of Toxic Substances Control [DTSC] and Regional Water Quality Control Board [Water Board]) provided comments on the designs and implementation plans during development.

2.1 Treatment Objectives

The treatment objectives were to heat the ISTT volume and remove COCs from the subsurface to the maximum extent practicable and, ideally, until the remedial action objectives for soil and groundwater presented in the ROD were met throughout the entire target treatment volume. Note that the ISTT volume only contains the four pesticide COCs (DBCP, 1,2-DCP, 1,2,3-TCP, and EDB) that were the focus of the ISTT treatment; the COC CCl_4 has been detected only at low levels to the east of the site. The ISTT was designed to reach target temperatures of 90 ±10 degrees Celsius (°C) in the unsaturated zone less than 10 feet bgs, 95 ±5°C in the unsaturated zone 10 feet bgs and deeper, and to the boiling point of water or more than 100°C in the saturated zone using electrical resistance heating (ERH). The ROD contains RAOs that identify soil and groundwater cleanup levels for the site COCs. However, because these pesticide COCs had not previously been treated by ISTT, it was unknown whether ISTT could provide treatment to achieve the RAOs throughout the entire treatment volume. For this reason, the implementation approach for ISTT was to heat the target treatment volume to achieve the target treatment temperatures, maintain the target temperatures, and monitor the quantity and rate of COCs removed during the ISTT process. When the COC removal rate reached a state of “diminishing returns” as agreed to by stakeholders, the ISTT system would be turned off. Monitoring the vapor treatment system influent vapor concentrations and flow rate as well as COC vapor concentrations at individual extraction wells were used to assess diminishing returns.

In addition, the ISTT implementation approach included the objective of protecting site workers and nearby residents, which was done by keeping pneumatic control over the treatment volume and treating extracted vapors.

2.2 Design Summary

The ISTT system was designed by Current Environmental Systems (CES); details of the design are provided in the RAMP (CES, 2010). Key design details are discussed in the following sections.

2.2.1 Treatment Volume

The final ISTT design covered about 26,719 square feet, with treatment depths ranging from 40 to 80 feet bgs. The total treatment volume was 52,478 cubic yards. The treatment volume and ERH electrode layout are shown on Figure 2-1. In total, the treatment volume contained 111 electrodes with final depths of 40, 60, or 80 feet bgs. The electrodes were multi-segmented to allow power to be applied at different depth intervals. All electrodes contained a well casing screened for soil vapor extraction (SVE), while approximately one-sixth were designated as “star” electrodes which had a modified wellhead that allowed for liquid extraction, which made them dual-phase vapor extraction (DVE) wells. In addition, 128 shallow electrodes, also known as puppy electrodes, were installed where treatment was required for shallow soils less than 10 feet bgs. Nineteen temperature monitoring wells (TMWs) were designed in the treatment volume to monitor heating performance. In general, thermocouples were installed at 5-foot-bgs intervals for a total of 293 thermocouples at the site.

Approximately 6 megawatts (MW) of power would have been required to treat the entire treatment volume at once. During the preliminary design, discussion with the local utility provider did not indicate power limitations; however, during the final design phase, a retail establishment was constructed nearby and began operation. The additional load on the utility grid from this new power user resulted in the utility provider approving an initial service connection of only 1.0 MW. The ISTT design proceeded assuming power would be limited to 1.0 MW and treatment would be required in six stages. Eventually the utility provider increased the available power to 2.5 MW, which resulted in the ISTT design addendum to treat the site in three stages.

Stage 1 was designed to treat the southern portion of the treatment volume from 0 to 40 feet bgs with 1 MW of power. The collected soil gas would pass through one treatment train. Stage 2 was designed to treat the central portion of the treatment volume from 0 to 80 feet bgs with 2.5 MW of power and an additional treatment train to handle extracted soil gas. Stage 3 treated the remaining treatment volume using 2.5 MW of power after completion of the earlier stages. Each stage included one or more zones, which are areas with groups of electrodes installed to specific depths. Stage 1 included Zone 1. Stage 2 included Zones 2 and 3, and Stage 3 included Zones 4, 5, 6, and 7.

2.2.2 Treatment Process

When electrical current is applied to the subsurface using the ERH process, subsurface temperatures become elevated by the resistance encountered when electrical current travels through soil from one electrode to another. Electrical current to the electrodes at the site was provided by the ISTT vendor’s proprietary power supply units (PSUs). Each electrode included a well casing that allowed for the collection of soil gas and steam from the treatment volume, and approximately 30 percent of the electrodes included a small suction line to extract groundwater. Extracted soil gas was collected by a manifold and routed to the treatment pad to the south of the ISTT volume.

The treatment pad consisted of an air-water separator, cooling tower, coalescer, and granular activated carbon (GAC) vessels. The soil gas treatment train included two identical sets of units for Stages 2 and 3 to handle the additional vapor flow. Extracted soil gas was dewatered and cooled before being passed through vapor phase GAC vessels. Separated water was treated through liquid phase GAC and then piped into the influent of the existing groundwater pump and treat system. The treatment system process and instrumentation diagram (P&ID) is shown on Figure 2-2.

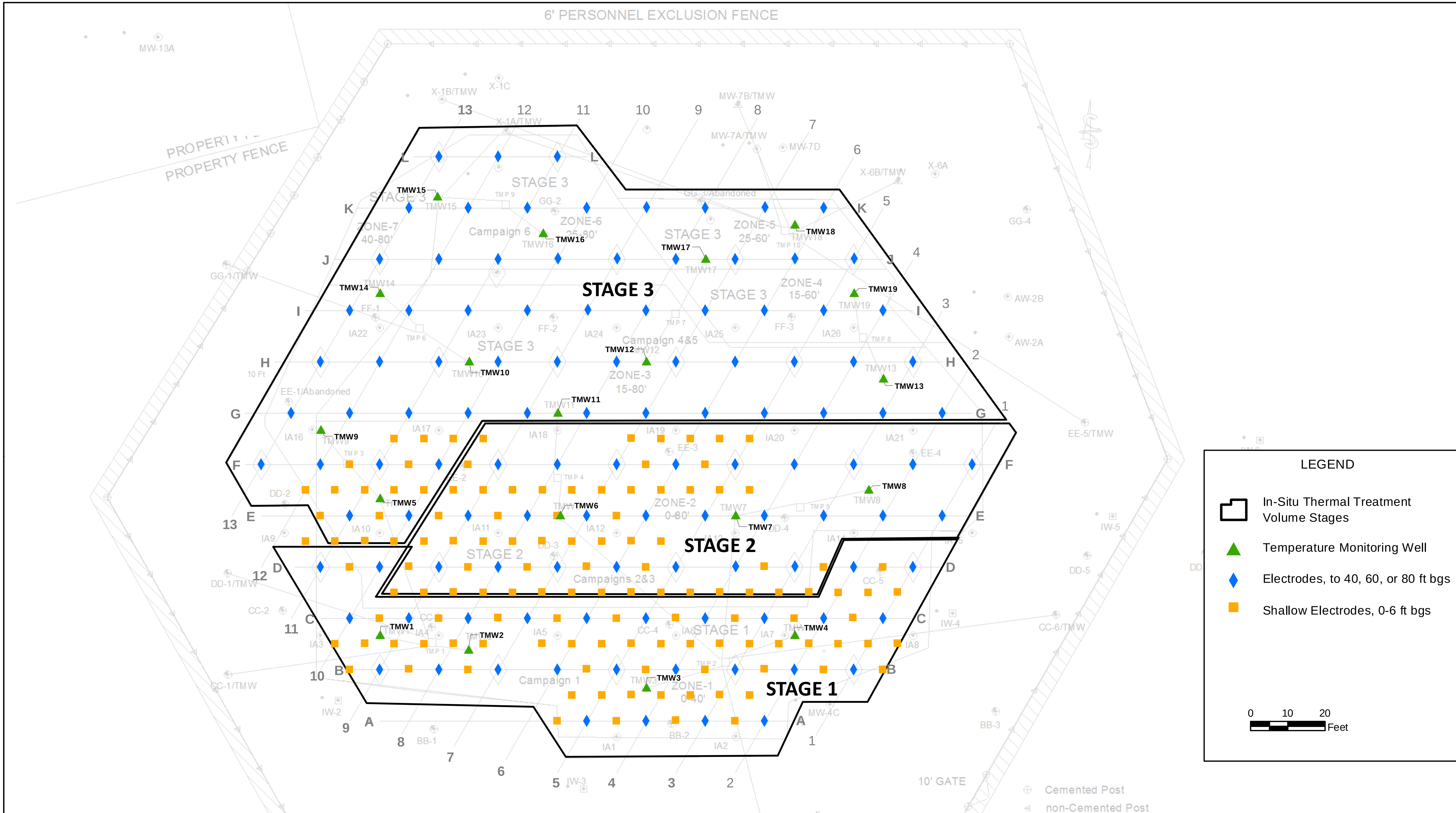

FIGURE 2-1
In Situ Thermal Treatment Volume and Electrode Layout
Frontier Fertilizer - Davis, CA

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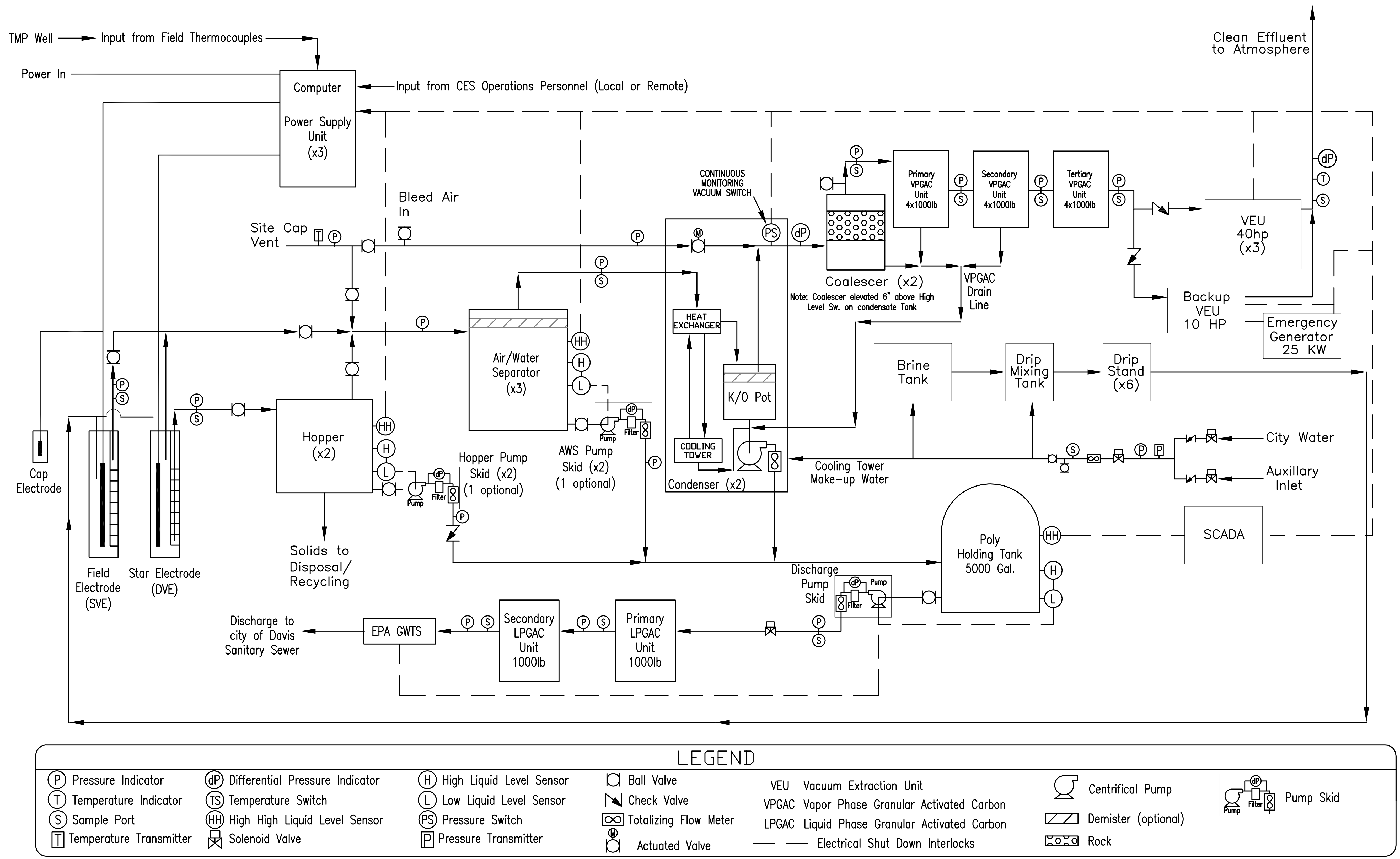


Source: Current Environmental Solutions, 8/23/2010.

FIGURE 2-2
Process and Instrumentation Diagram
Frontier Fertilizer - Davis, CA

CH2MHILL

Additional design features included a high-density polyethylene (HDPE) cap over all but the northern treatment area. The northern area was not capped because ISTT treatment did not start until 15 or 25 feet bgs. The unheated overlying soil provided a natural cap. The HDPE cap was constructed over a porous gravel layer, which was maintained under a slight vacuum so that any fugitive emissions would be captured. The extracted cap air was treated through the same vapor treatment train as the extracted soil gas.

2.3 Monitoring Objectives

Various environmental media (soil vapor, groundwater, and ambient air) were monitored per the ISTT Sampling and Analysis Plan (SAP) (CH2M HILL, 2011a) and the Air Monitoring Work Plan (CH2M HILL, 2011b). Additional monitoring of the ISTT system operational parameters, such as electrical energy, temperature, vapor pressure, and water use, was conducted as described in the SAP.

The objectives of the various monitoring activities as described in these documents were to determine the effectiveness of both in-situ and ex-situ components of the system, monitor ambient air that could impact site workers and nearby residents to ensure that COCs were not being released from the site at concentrations that could cause impacts, and classify investigation-derived waste.

2.4 Community Relations

Prior to the start-up of the ISTT, EPA held evening meetings on October 28, 2009, and January 18, 2011, to hear community input, and the Frontier Fertilizer Superfund Oversight Group (FFSOG) reviewed specific documents such as the Air Monitoring Work Plan and the Community Notification Plan. The FFSOG stayed involved throughout the ISTT operation through weekly progress emails and monthly calls. EPA prepared Fact Sheets and held an October 12, 2011, meeting to inform the larger community of ISTT progress.

The DTSC and the Water Board also were involved throughout the ISTT design and operation through system planning meetings, technical document review, and ISTT operational data review.

SECTION 3
In Situ Thermal Treatment Activities

Major ISTT activities with start and completion dates are identified in Table 3-1. Photo documentation of the electrodes and ISTT components is contained in Appendix A, and photos of the decommissioning are provided in Appendix F.

TABLE 3-1
Chronology of Events
Frontier Fertilizer Superfund Site, Davis, California

Activity	Date
ISTT PMP installation and pre-heating soil sampling [a]	October 10, 2008 – November 18, 2008
Groundwater samples collected from PMPs [a]	December 2, 2008 – December 10, 2008
ISTT electrode installation	September 21, 2009 – December 15, 2009
ISTT system installation	July 19, 2010 – March 3, 2011
ISTT Stage 1 operation	March 6, 2011 – November 8, 2011[b]
ISTT Stage 2 operation	July 15, 2011 – March 15, 2012
ISTT Stage 3 operation	January 13, 2012[c] – October 12, 2012
ISTT SVE terminated	October 26, 2012
ISTT aboveground system removal completed	January 3, 2013
Post-heating sampling conducted (groundwater and soil)	August 19, 2013 – September 13, 2013
Electrode well field destruction and cap, fence removal	June 2, 2014 – December 23, 2014

[a] These activities reported in *In Situ Thermal Treatment Phase 3 Preliminary Monitoring Point Installation Frontier Fertilizer Superfund Site* (CH2M HILL, 2009).

[b] Stage 1 was effectively completed October 18, 2011; however, regulator concerns about two electrodes (C5 and C6) continued operations almost a month longer.

[c] Stage 3 operations were expedited to start heating deep electrodes while Stage 2 treatment was still ongoing.

Note:

PMP = preliminary monitoring point

3.1 System Installation

The electrode field was installed in 2009, ahead of the main system components, to meet schedule needs. Electrode and TMW installation details are contained in Appendix A. Because the Site Management Plan was finalized after electrode installation, it contains details on utility abandonment in the electrode field (CES, 2010).

During system installation, CH2M HILL had a construction inspector onsite to record construction activities performed by CES and their subcontractors. The inspector documented progress, and identified deviations to the design documents that would require resolution.

Prior to the startup of each Stage, CES submitted a signed precommissioning checklist per the Site Management Plan (CES, 2010). In addition, CH2M HILL construction inspector documented the function of the system safety interlocks.

The City of Davis Fire Department was given a tour of the site to discuss normal operations and the location of the emergency stop button to be used to power down the system before responding to any emergencies at the site. Normal operations that might have triggered public concern included a flashing red light on the power supplies which would indicate it was not safe to enter the wellfield due to electrical hazard. A second tour was given to the City of Davis Fire Department to expose more crew members to the system. Tours were conducted on February 16 and March 3, 2011.

3.2 Monitoring

During operation, system operational data were logged hourly to a database and made available to team members (i.e., EPA). Logged data included vapor and liquid flow rates, equipment runtime hours, subsurface power application, and thermocouple temperature readings. CES was responsible for monitoring this to verify system operation. Remote read-only access to the database was made available to CH2M HILL and EPA for independent review.

Vapor pressure (VP) monitoring was performed manually on site SVE wells. Entry into the electrode field required that the power be turned off. VP readings were collected every 2 to 4 weeks (depending on temperature). For wells that were actively extracting vapor or near active wells, readings were performed with a vacuum gauge capable of measuring inches of mercury. Inactive wells and pneumatic monitoring points outside the treatment volume typically exhibited less vacuum, were measured with a monometer, and were recorded in inches of water.

3.3 Sampling

Electrode and process sampling was predominantly conducted by CES with oversight by CH2M HILL. The laboratory contract was held by CH2M HILL, and results were provided directly to CH2M HILL. Ambient air monitoring was performed by CH2M HILL.

3.3.1 Electrode Sampling

Each electrode was completed as an SVE well with sample port. Vapor samples were manually collected at each location by isolating the SVE wells from the SVE system and connecting a SUMMA canister and vacuum gauge to the sample port of the electrode. The SUMMA canister was opened and allowed to fill with vapors, but collection was stopped before pressures equalized, usually with approximately 5 inches of mercury remaining on the SUMMA canister.

During baseline sampling, vapor from the electrodes was sampled directly, but after subsurface temperatures became elevated, the vapor was too humid. Vapor samples from hot electrodes were passed through a cooling coil immersed in an ice bath to condense entrained humidity prior to the sample entering the container.

All electrode vapor samples were analyzed for volatile organic compounds (VOCs) (including site COCs) by method TO-15. The SUMMA canisters varied from 400 to 1,000 milliliters (mL). For the first few months of the project the electrode vapor samples were analyzed by the EPA Region 9 Laboratory in Richmond, California. Despite preplanning with the Region 9 laboratory, however, they could not maintain capacity for the quantity of samples and turnaround times required for ISTT monitoring, and by May 2011 all electrode vapor samples were sent to Air Toxics Laboratory in Folsom, California. (In 2012 Air Toxics Laboratory changed names to Eurofins, but for simplicity the laboratory will be referred to as Air Toxics throughout this report.)

3.3.2 Process Sampling

Influent and effluent vapor for the vapor-phase GAC system was sampled similar to SVE wells; however, because the sampling was conducted after the vapor stream had been dewatered, a cooling coil was not needed. Vacuum on the GAC vessels was high, and system turndown was momentarily required to reduce system vacuum so that the SUMMA canisters could fill. All vapor GAC samples were analyzed for VOCs (including site COCs) by method TO-15. The SUMMA canisters varied from 400 to 1,000 mL. Like the electrode samples, the vapor GAC samples were all sent to Air Toxics Laboratory shortly after system startup.

Influent and effluent liquid for the liquid-phase GAC system was sampled while the transfer pump was operating. Sample bottles were filled by opening the required sample port and slowly filling the required sample bottles. The EPA Region 9 laboratory processed all liquid samples for the ISTT system. Samples were routinely sampled for VOCs (including site COCs) by EPA Method 524.2 and 504.1. Periodically during the first few months of startup, the liquid effluent was also sampled for total suspended solids (Method 2540), metals (EPA 200.7/245.1), hexavalent chromium (EPA 281.6), 5-day biochemical oxygen demand (BOD5) (SM5210B), and bis(2-ethylhexyl)phthalate (EPA 8270D).

The ISTT stack was a pipe that combined all the blower effluents and extended into the air approximately 10 feet above ground surface. The sample port was sufficiently high that a small Teflon tube was connected to the stack near the top of the stack to allow effluent gas sampling without climbing to the top of the stack. Prior to sampling, the Teflon tube was connected to a sample port on the blower influent side and purged to draw stack gas into the tube. After purging, the tube was connected to 6-liter SUMMA canister and filled until only a few inches of mercury vacuum remained. All stack samples were analyzed for VOCs (including site COCs) by method TO-15SIM. Initially these samples were analyzed by the Region 9 laboratory. Shortly after startup, these samples were analyzed by the Air Toxics Laboratory.

3.3.3 Ambient Air Monitoring

Ambient air samples were collected at stations setup around the ISTT area and the northern and southern boundaries of the site (see Figure 3-1). Sample stations maintained the 6-liter SUMMA canister intake at a breathing height of approximately 5.5 feet above ground surface. While at the station, the canister was shielded with reflective insulating foam to avoid becoming overheated. SUMMA canisters were connected to a 24-hour regulator and allowed to fill for approximately 1 day. All ambient air monitoring samples were analyzed for VOCs (including site COCs) by Method TO-15SIM. The EPA Region 9 laboratory was the primary laboratory for analysis; however, when sample quantity exceeded the Region 9 capacity, Air Toxics Laboratory was used for analysis.

Figure 3-1
Ambient Air Sample Locations
Frontier Fertilizer - Davis, CA

SAC \\ZION\SACGIS\PROJ\FRONTIERFERTILIZER\PRELIMINARY_MONITORING_POINT_TECHNICAL_MEMORANDUM\MAPFILES\AIRGAS_MONITORINGPLAN.MXD SSCOPES 6/16/2009 10:58:35

CH2MHILL

ES062009004SAC Figure_1_2012.ai 02.23.2012 it

SECTION 4

ISTT Results

4.1 Stage 1

4.1.1 Temperature

Stage 1 temperatures at 7-day intervals are shown on Figures 4-1 through 4-4 (all Section 4 figures are presented at the end of this section). Temperature objectives were achieved except at 40 feet bgs. Pre-heating contaminant data indicated minimal contamination at 40 feet deep (CH2M HILL, 2009).

4.1.2 SVE Trends

Stage 1 included all A, B, and C row electrodes as well as D1, D2, D3, D10, and D11. Total COC concentrations measured in vapors were plotted for each row of electrodes. Figures 4-5 through 4-8 show the concentration trends for Stage 1 electrodes (tabular data provided in Appendix A).

4.1.3 Operation and Shutdown

Stage 1 was started March 6, 2011. By August 26, 2011, Stage 1 was generally at target temperatures, and 21 out of 26 electrodes were considered to have reached diminishing returns. In general, as noted in Figures 4-5 through 4-8, electrode vapor concentrations peaked in June and July 2011. During Stage 1, it was unknown if additional contaminants would be recovered with additional heating or with operation of the puppy electrodes, so heating continued for several months. By October, all wells were considered to have reached diminishing returns; however, slight increases in vapors at two northern perimeter electrodes continued stakeholder concerns about remaining COC mass in Stage 1. By this time, Stage 2 had begun operation, and it was unclear whether the source of the continued low-level COC detects was from Stage 1 or was from Stage 2 and being captured by Stage 1 SVE. In November, it was determined that Stage 1 perimeter detections were likely being caused by Stage 2 operations, and shutdown of Stage 1 was approved by the State of California (DTSC and Water Board) and proceeded. The shutdown recommendations are in Appendix A.

4.2 Stage 2

4.2.1 Temperature

Stage 2 temperatures at 7-day intervals are shown on Figures 4-9 through 4-12. TMW-6 and TMW-7 achieved target temperatures. The 45- to 60-foot-bgs depth interval at TMW-5 and TMW-8 did not reach target temperatures; however, the temperatures at that depth interval eventually reached upwards of 90°C.

Elevated temperatures were observed before startup in Stage 2 near the water table, especially at TMW-6 and TMW-7. This was, in part, attributed to heated groundwater leaving Stage 1 and being pulled towards extraction wells to the north. The extraction rates of nearby extraction wells were reduced in mid-2011 to reduce this effect.

For Stage 2, in general, the temperature objectives were achieved except at TMW-5 and TMW-8 in the 45- to 60-foot-bgs depth range, but pre-heating contaminant data indicate that this depth contained minimal contamination and achieved temperatures of at least 80°C at both locations, which would increase hydrolysis degradation kinetics for the COCs. TMW-5 and TMW-8 were exposed to conductive heat losses on both the south and east or west sides, which may have contributed to the difficulty with heating these zones. In addition, electrode elements were installed to 43 feet bgs and then resumed at 50 feet bgs, which would have limited power application to this depth range. In addition, electrode E2 was believed to have failed; power applications to this electrode were frequently observed from 0 to 10 watts per foot, whereas others ranged from 200 to over 1,000 watts per foot. With electrode E2 being the only upgradient heating element, this could explain why TMW-8 target temperatures were not achieved. If the lower temperatures are a result of a failed electrode the impacted area was at least localized and small. It was also postulated that TMW-5 and -8 may have had higher preferential groundwater flow through the 45- to 60-foot depth range, which would have increased convective heat losses from this depth interval. Despite the lower temperatures achieved in this zone, post-treatment sampling indicated that ISTT provided effective treatment in this area.

4.2.2 SVE Trends

After observing the electrode vapor COC concentrations in Stage 1, the strategy for reviewing electrode vapor data was revised to provide better correlation to site temperatures. Each TMW was made the center of a Thiessen polygon (Figure 4-13), and vapor COC concentrations were averaged for electrodes within the polygon. This allowed for electrode vapor concentrations to be better correlated to subsurface temperatures at each TMW. Average total COC concentrations for TMW-5, -6, -7, and -8 are presented on Figure 4-14 (tabular data provided in Appendix A).

4.2.3 Operation and Shutdown

Stage 2 heating began in July2011. Stage 2 soil gas concentrations peaked around September to October 2011 in TMW-5, -6, and -7. TMW-8 was slower to reach target temperatures, though soil gas concentrations peaked around the same time as the other TMWs; however, in December another substantial concentration was observed. The multiple peaks were likely the result of different depths reaching temperature at different times. Stage 2 reaching diminishing returns was determined to have occurred in March 2013 and the State of California (DTSC and Water Board) approved the shutdown, except for the area around TMW-8, at which power application continued during Stage 3 operations. The shutdown recommendations are in Appendix A.

4.3 Stage 3

4.3.1 Temperature

Stage 3 temperatures at 7-day intervals are shown on Figures 4-15 through 4-25. Since Stage 3 was part of the expedited “roll” heating strategy, where power available from Stage 2 was applied early to the deeper electrode segments in Stage 3, the 45- to 80-foot depths of Stage 3 show an increase in temperature first. As can be seen from most TMW plots, like TMW-17 and TMW-18, the deeper segment temperatures increased consistently over time while the upper segment temperatures lagged behind. Once the deeper segments reached about 100°C, the upper segments rapidly increased in temperature. TMW-15 had trouble reaching target temperatures in the 40- to 50-foot depth range, possibly due to the close proximity of this TMW to the perimeter of the ISTT volume and a flow of groundwater through this depth that cooled the area.

TMW-14 temperature data indicated that it was not increasing past 100°C at the deeper depths, but after a field investigation this TMW was discovered to have water intrusion (they are normally dry). The TMW was sealed at the surface to keep further water from entering the casing, which resulted in more representative subsurface temperature readings.

4.3.2 SVE Trends

Similar to Stage 2, each Stage 3 TMW was made the center of a Thiessen polygon, and the vapor concentrations were averaged for electrodes within the polygon. This allowed for electrode vapor concentrations to be better correlated to subsurface temperatures. Average total COC vapor concentrations are presented on Figures 4-26 through 4-28 (tabular data presented in Appendix A).

4.3.3 Operation and Shutdown

Stage 3 heating began in January 2012. Stage 3 soil gas concentrations peaked around April and May 2012, and by September concentrations were low enough that most locations were determined to have reached diminishing returns. However, TMW-15 had not yet reached target temperature. A drill rig was mobilized on September 24 to collect soil samples from the edge of TMW-15 to evaluate the extent of remediation achieved and degree of remaining contamination. One soil sample was retrieved at 45 feet bgs. Safety concerns due to drill rig pushback and potential for encountering boiling temperatures and steam precluded deeper advancement. COC concentrations in the retrieved soil sample were non-detect, with detection limits around 5 micrograms per kilogram (µg/kg) (however, there are no RAOs for soil below 10 feet bgs). Based on these results and previous soil vapor results, Stage 3 was concluded to have reached diminishing returns on October 12, 2012, and shutdown was approved by the State of California (DTSC and Water Board). The shutdown recommendations are in Appendix A. SVE operations continued until October 24 to allow subsurface temperatures a short time to cool to limit fugitive emission potential.

4.4 Mass Removal

4.4.1 Treatment Volume Mass Estimate

The Frontier Fertilizer pre-heating mass estimate from 2009 was generated from soil sample results from prior investigations (Interim Remedial Investigation [Bechtel, 1997], Supplemental Remedial Investigation [Bechtel, 1999], and Supplemental Remedial Investigation 2 [CH2M HILL, 2003]) and soil samples collected at 5-foot intervals from the 28 Phase 3 monitoring wells that were installed in fall 2008. The mass estimate loaded sample results into a numerical model and performed a Kriging analysis on the data. The resultant output was that the ISTT volume contained an estimated 57.4 pounds (lbs) of COCs. A breakdown of the estimated contaminant mass of each COC within the treatment volume prior to ISTT is as follows:

- DCP – 40.4 lbs
- EDB – 9.7 lbs
- DBCP – 2.2 lbs
- TCP – 5.1 lbs
- Total COCs – 57.4 lbs

4.4.2 Treatment Volume Mass Removal

The mass of contaminants recovered and treated by ISTT was calculated from the product of the vapor flow rate immediately before entering the carbon treatment and the COC analytical results from the sample point in similar location. Vapor flow rates were recorded hourly, and sample data were collected up to three times per week. DCP was detected in all analytical samples, but other COCs were sometimes not detected above the reporting limit. When COCs were not detected above the reporting limit, the concentrations used in the mass estimates were estimated at one-half the reporting limit.

Using this method, the March 6, 2011 to October 21, 2012 mass removal estimate is as follows:

- DCP – 52.5 lbs
- EDB – 1.8 lbs
- DBCP – 2.1 lbs
- TCP – 23.0 lbs
- Total COCs – 79.4 lbs

The estimated COC mass removed is the same order of magnitude as the pre-heating mass estimates, except for TCP, but it should be noted that the pre-heating TCP estimate was created from a smaller data set and was therefore less certain.

Cumulative COC mass removal is presented on Figure 4-29.

Total VOC mass removal was 97 lbs. In additional to the COCs, approximately 1.7 lbs of vinyl bromide and 1.2 lbs of chloroform were removed. The remaining volatiles were largely benzene, toluene, xylenes, and chlorobenzene.

The mass removal does not account for any in situ degradation of COCs. It is possible that with elevated temperatures some COC mass hydrolyzed or reacted with water. Brominated COCs generally hydrolyze faster at elevated temperatures (Davis, 2007). For example, the half-life of EDB at 100°C is 9 hours. Sampling was not performed to monitor for COC hydrolysis; however, one of the COCs, EDB, has a hydrolysis pathway that produces vinyl bromide. Vinyl bromide was detected in only a handful of pre-heating soil and groundwater samples and at relatively low concentrations; however, during ISTT vinyl bromide was detected frequently, and 1.7 lbs of vinyl bromide were removed during the course of ISTT. It would take a minimum of 3.1 lbs of EDB going through hydrolysis to produce 1.7 lbs of vinyl bromide. However, vinyl bromide was not found to be the predominant hydrolysis pathway for EDB during a literature review (Davis, 2007), which suggests that possibly more than 3.1 lbs of EDB could have been hydrolyzed. With the available data it is not possible to quantify the total amount of COCs that may have hydrolyzed at the site; however, it is evident that hydrolysis was responsible for some COC treatment.

4.5 Power Input

Power was applied to electrodes by three power supply units. Stage 1 was powered by PSU 1, Stage 2 was powered by PSUs 2 and 3 with PSU 2 powering the electrodes less than 45 feet bgs, and PSU 3 powering the electrodes below 45 feet bgs. During initial heating of Stage 2, the deeper depths of Stage 2 were not heating efficiently and it was believed that hot water was rising from the shallow portions of Stage 2, creating an upward migration of water which was pulling cool water from below Stage 2. To limit hot water currents, the deeper portion of Stage 2 was heated first by applying more power to deeper electrodes. The additional power can be seen in the slope of the PSU 2 and PSU 3 power graphs after about October 2011. PSU 1 was repurposed to heat Stage 3 in January 2012. Cumulative power input over time is presented in Figure 4-30. The total power applied to the subsurface for ISTT was 6,994,882 kilowatt-hours (kWh).

4.6 Process Monitoring

The process monitoring was ongoing and communicated between the project team by frequent emails and weekly conference calls and will not be presented in detail in this report. A brief summary of process statistics are provided along with operational deviations.

4.6.1 Process Summary

The SVE system average extraction rate was 585 standard cubic feet per minute (scfm), with a typical range from 300 to 800 scfm. The vapor phase influent COC concentration averaged 2,780 micrograms per cubic meter ($\mu g/m^3$), while the peak concentration was 45,750 $\mu g/m^3$.

Total extracted water from the ISTT volume (the total from DVE wells and condensed vapors) was 1,022,136 gallons, which was about an average of 1.3 gallons per minute. The extracted and condensed water was low in COC concentrations, the maximum influent to the liquid phase GAC was 145 micrograms per liter (µg/L) with most results below 50 µg/L. Total COCs removed by extracted and condensed water was less than 1 pound.

4.6.2 Process Deviations

Major process deviations included modifications to the vapor treatment and sediment removal systems, and changes to power applications.

4.6.2.1 Vapor Treatment Deviations

In general, the vapor phase GAC performed well and removed most VOCs applied to the GAC system, and as documented in Section 4.7, resulted in no COCs detected above residential action levels (RALs). However, vinyl bromide was observed in the vapor GAC train at low levels (2 to 6 $\mu g/m^3$) during initial system startup. There was concern that these levels were near the site boundary risk-based action level for vinyl bromide of 3.1 $\mu g/m^3$ developed as part of the Air Monitoring Work Plan (CH2M HILL, 2011b), and that the GAC had poor removal for vinyl bromide. If vinyl bromide was being created by EDB degradation, there existed the potential for a significant increase as treatment continued and temperatures elevated. By June 2011, the tertiary GAC vessel was emptied of GAC and replaced with potassium permanganate-impregnated zeolite to react with the vinyl bromide and reduce effluent concentrations. With inlet concentrations of vinyl bromide above 50 $\mu g/m^3$, the zeolite was effective at removing greater than 60 percent of the vinyl bromide, but was less efficient at lower influent concentrations (Figure 4-31). Vinyl bromide was not detected above air monitoring RALs.

4.6.2.2 Sediment Removal Deviations

Sediments were recovered from both SVE and DVE wells in higher amounts than expected and from more wells than expected. The original design planned for removal of sediments from the DVE wells only; however, SVE wells also produced sediment that required treatment. In late 2011 the SVE stream was plumbed through the hoppers; previously the hoppers only received the DVE streams. To remove sediments from the treatment system, the effluent of the hoppers was filtered through geotextile filter bags (15 × 15 feet) for dewatering. The bags were located on the equipment pad and contained inside a constructed cover which was vented to the vacuum extraction treatment train to limit any fugitive emissions.

4.6.2.3 Power Application Deviations

For Stage 2 and Stage 3, power was biased to lower electrode elements until the lower subsurface depths were at a greater temperature than the upper segments. It was found to be more effective to heat the lower segments and let the heat convectively rise through the site rather than heating the upper segments at the same rate as the lower segments. In addition, heating the upper segments in unison with the lower was believed to create or increase convective heat losses outside of the Stage 2 treatment volume. Based on the optimal power observations, along with an opportunity to advance the schedule, Stage 3 was started in January 2012 by rolling excess power from Stage 2 into the deeper electrodes in Stage 3.

4.7 Ambient Air Monitoring

During operation of the ISTT system, 90 ambient air sample events were conducted. A total of 511 ambient air samples were analyzed, including field duplicates and excluding blanks and other quality control samples.

No COCs (DCP, EDB, TCP, and DBCP) were detected above RALs. A summary of sampling events for 2011 through 2012 is provided in Table 4-1. Complete details, including a map of sample locations, the RALs, and results, are documented in Appendix B.

TABLE 4-1
Summary of Ambient Air Sampling
Frontier Fertilizer Superfund Site, Davis, California

Quarter	Events	Samples*	Detection of COCs above RALs
1st Quarter 2011	7	42	None
2nd Quarter 2011	25	125	None
3rd Quarter 2011	14	81	None
4th Quarter 2011	11	66	None
1st Quarter 2012	7	42	None
2nd Quarter 2012	13	77	None
3rd Quarter 2012	11	66	None
4th Quarter 2012	2	12	None
Total	**90**	**511**	**None**

*Sample count includes duplicates and excludes any quality control samples (blanks, performance evaluation).

Notes:

COC = contaminant of concern
RAL = residential action level

4.8 ISTT Waste

Construction debris (477 cubic yards total) was sent to the Yolo County landfill.

The cumulative weight of treatment media (vapor GAC, liquid GAC, and spent zeolite) used was 87,000 lbs (dry weight) and was disposed of as non-hazardous waste under profile 07-016-9046 at US Ecology in Beatty, Nevada. Receiving facility compliance with the CERCLA Off-Site Rule was confirmed with the EPA Region 9 Regional Off-Site Contact.

The SVE system removed sediment from the electrode wells. The total amount of removed sediment was approximately 70 cubic yards (total 74 tons per weight tickets). This sediment was non-hazardous and transported to Recology's Hay Road Landfill under profile/job # 5551. Prior to transport, facility compliance with the CERCLA Off-Site Rule was confirmed with the EPA Region 9 Regional Off-Site Contact.

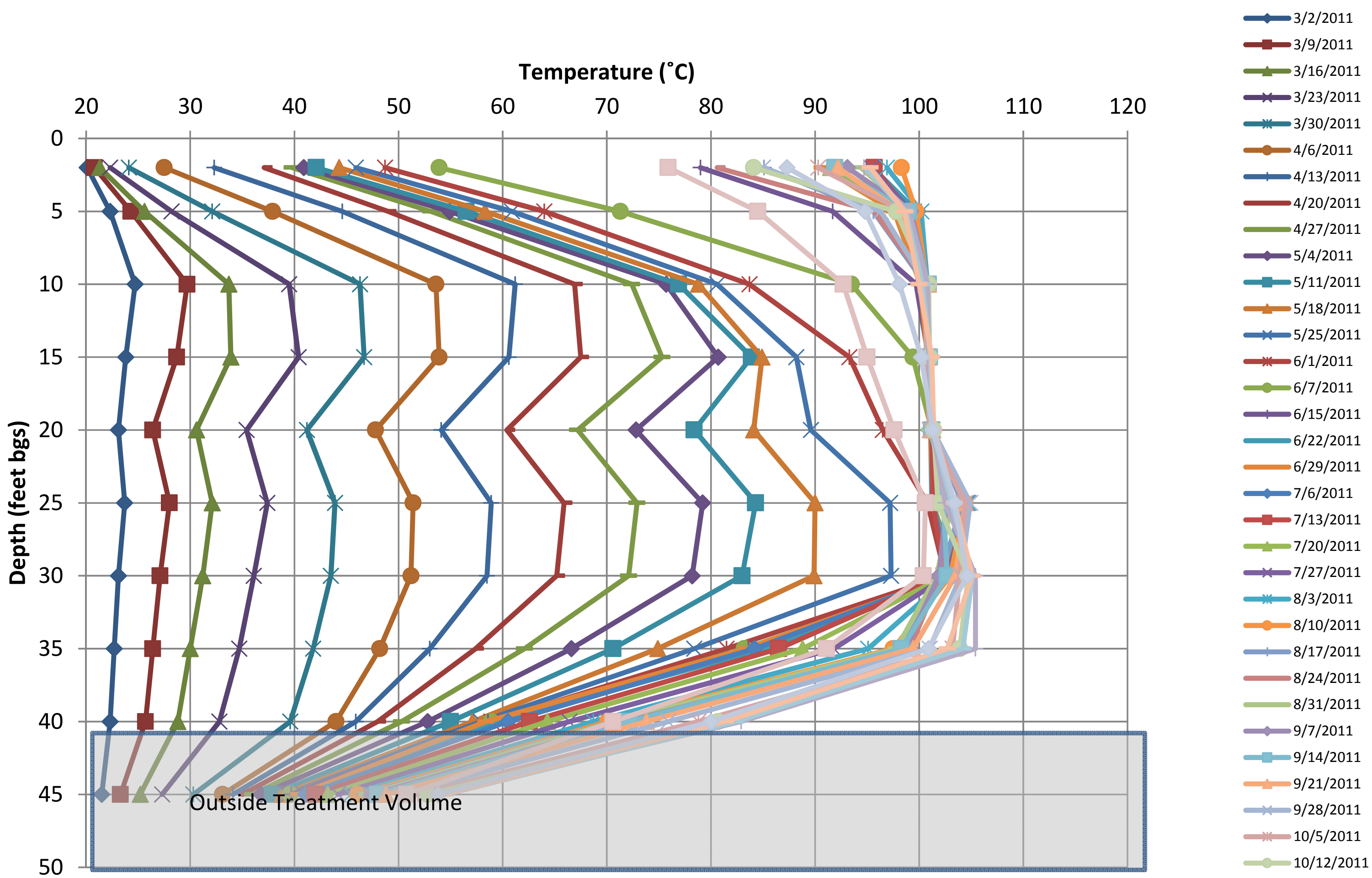


FIGURE 4-1

TMW-1 Temperature

Frontier Fertilizer - Davis, CA

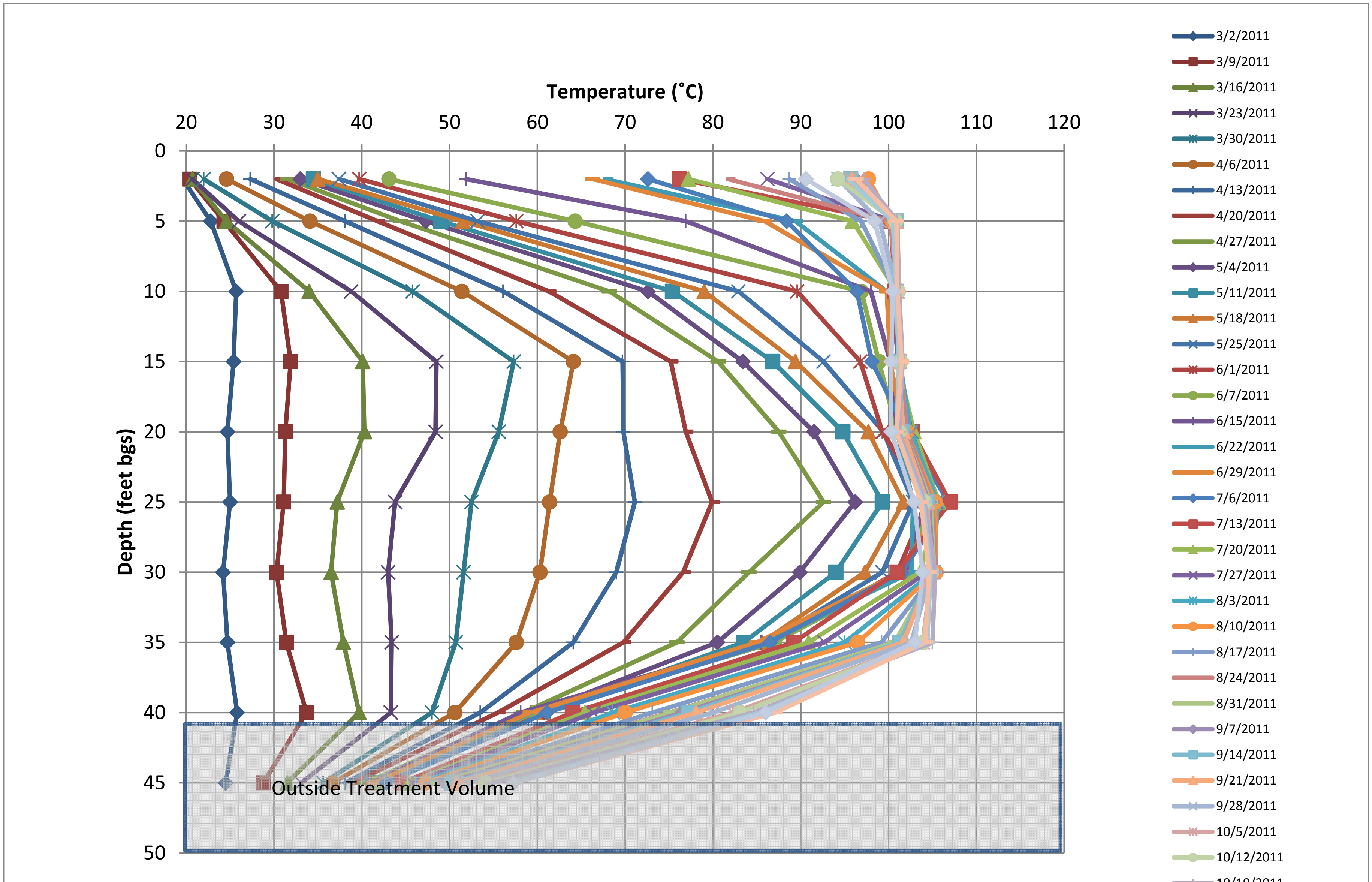


FIGURE 4-2
TMW-2 Temperature
Frontier Fertilizer - Davis, CA

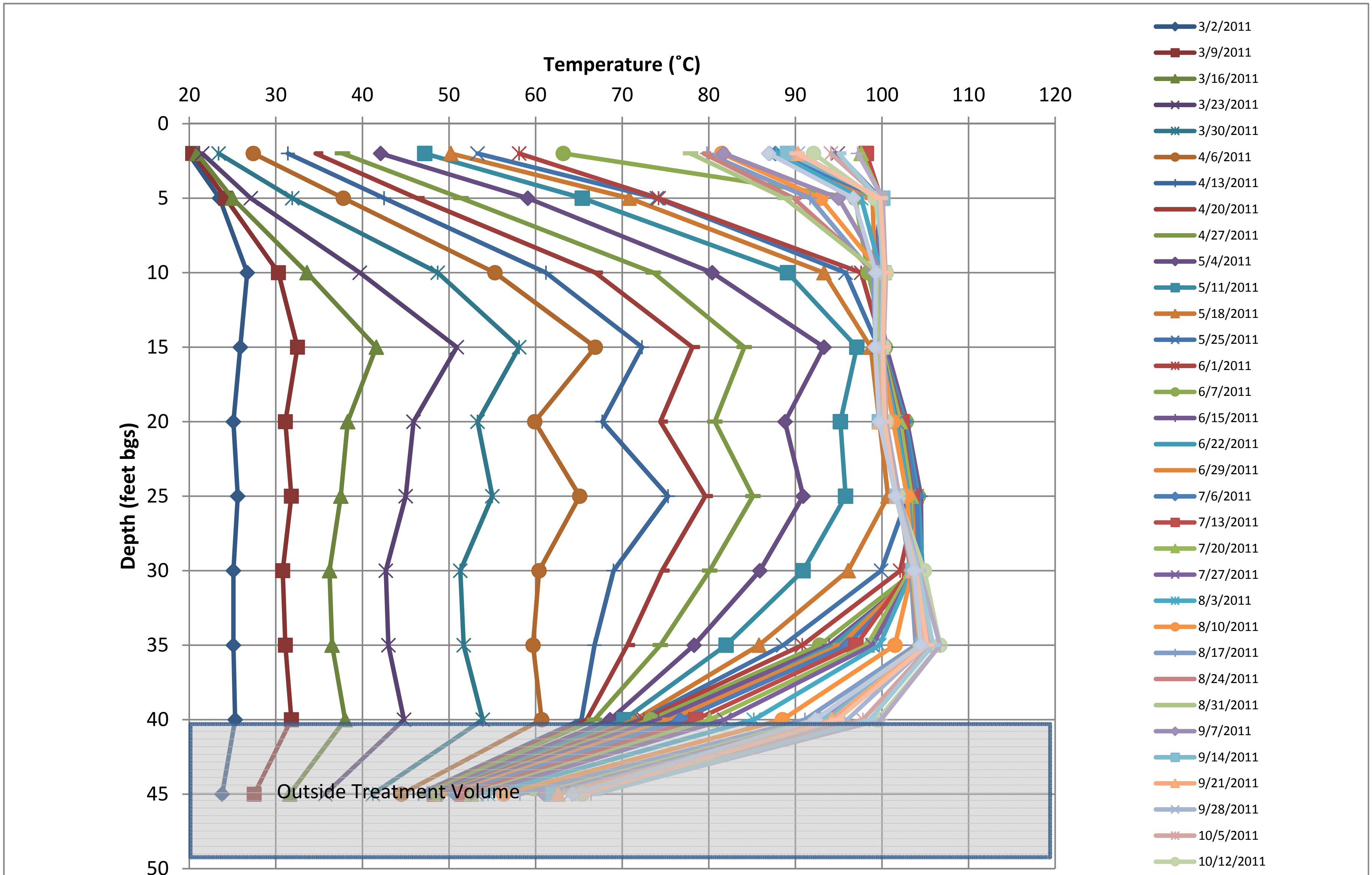


FIGURE 4-3
TMW-3 Temperature
Frontier Fertilizer - Davis, CA

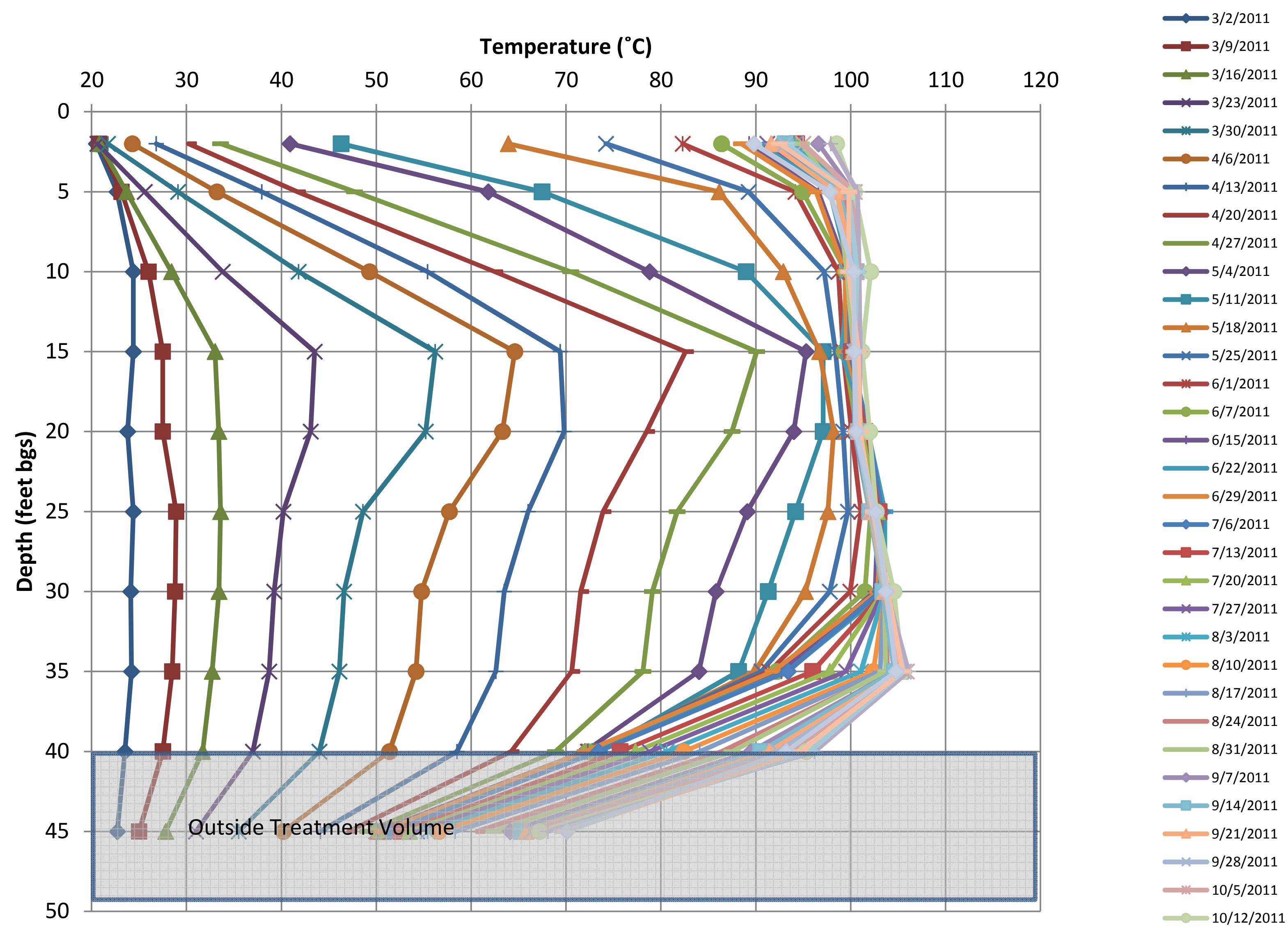


FIGURE 4-4
TMW-4 Temperature
Frontier Fertilizer - Davis, CA

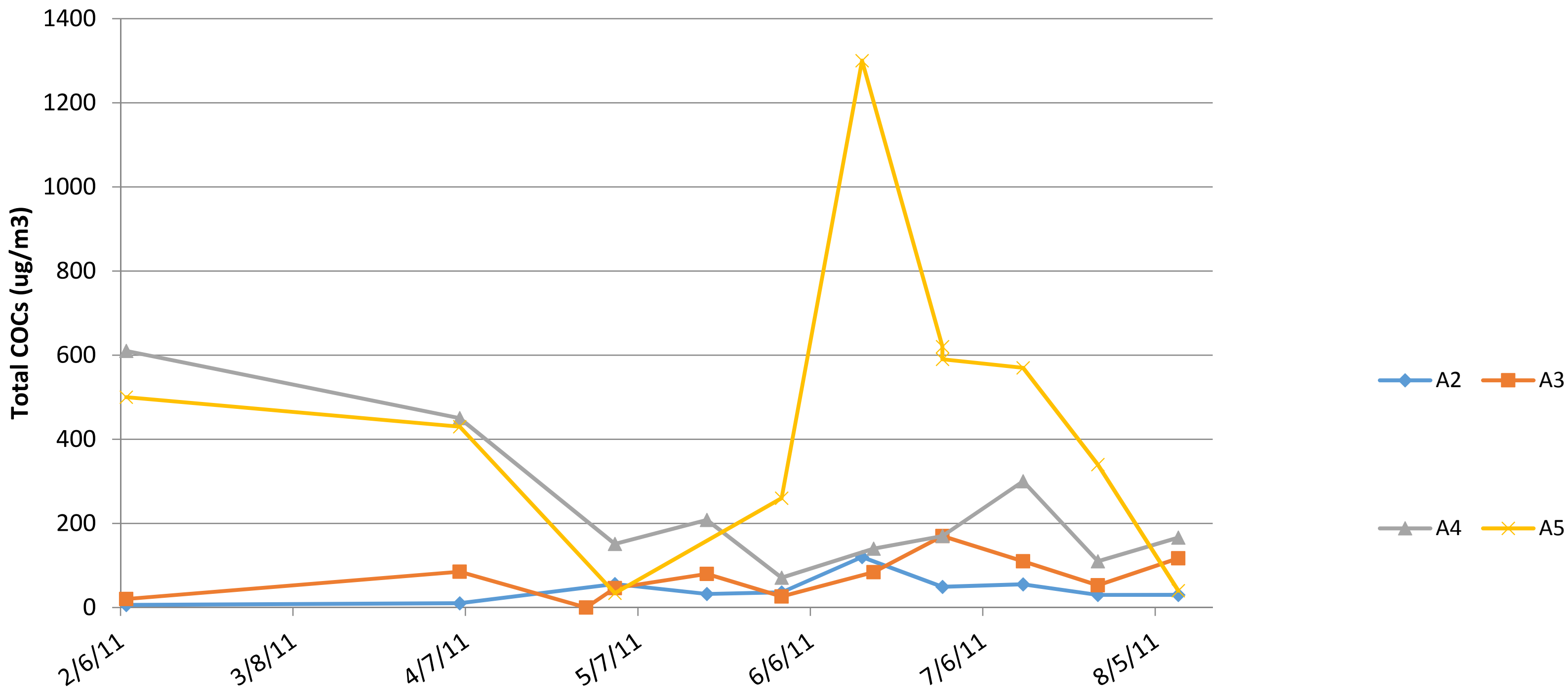


FIGURE 4-5
A-Row Electrode Concentrations, Stage 1
Frontier Fertilizer - Davis, CA

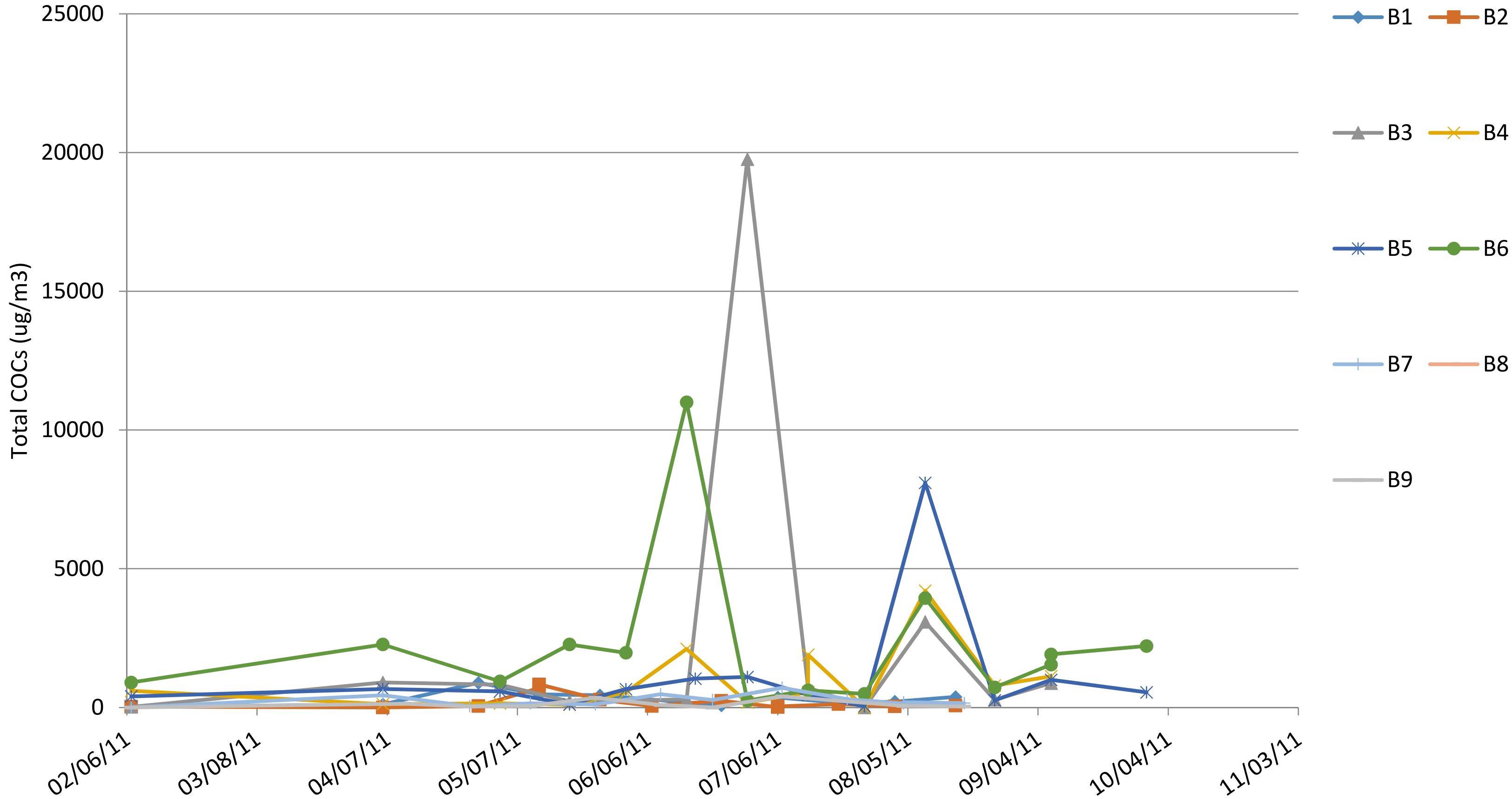


FIGURE 4-6

B-Row Electrode Concentrations, Stage 1

Frontier Fertilizer - Davis, CA

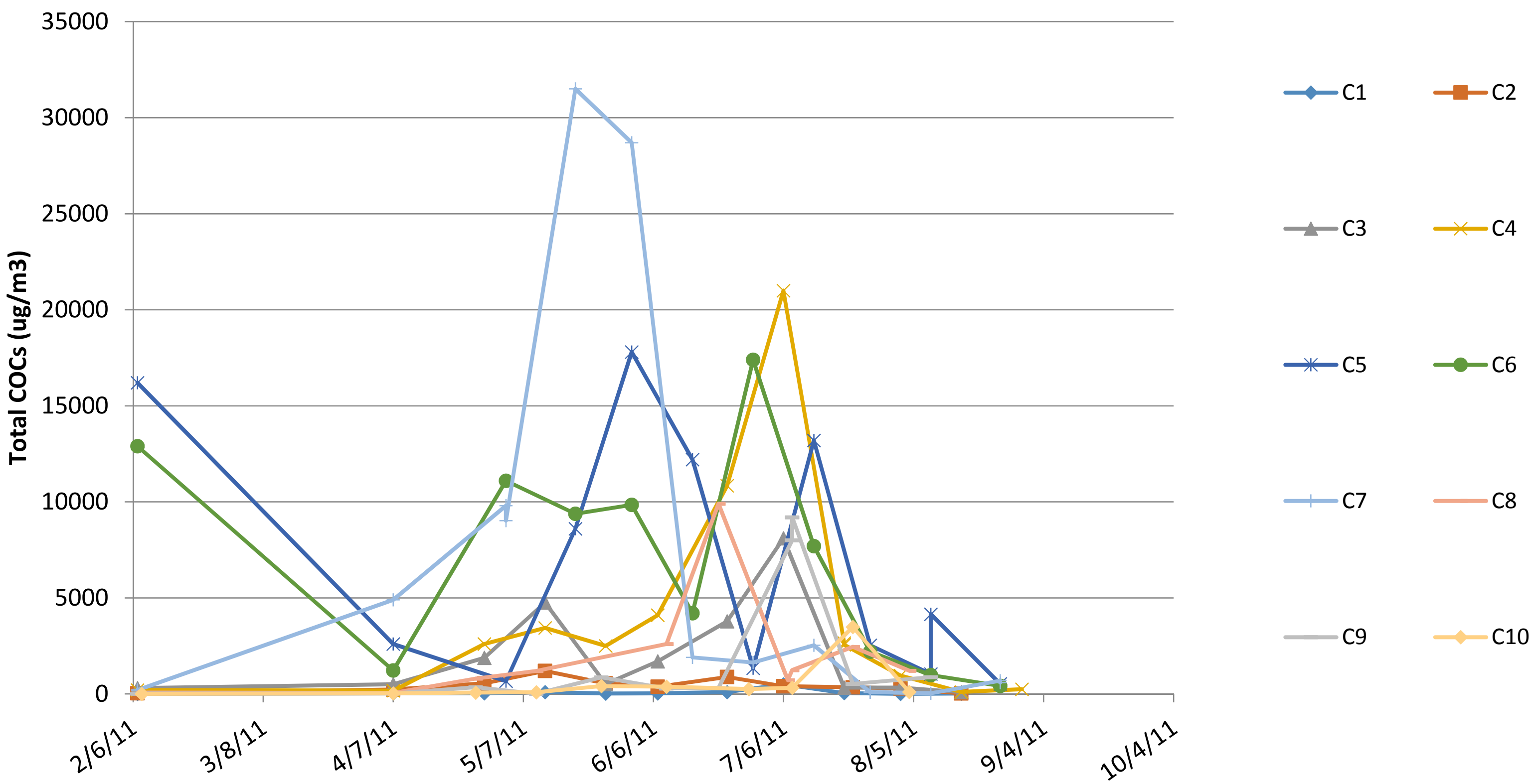


FIGURE 4-7

C-Row Electrode Concentrations, Stage 1

Frontier Fertilizer - Davis, CA

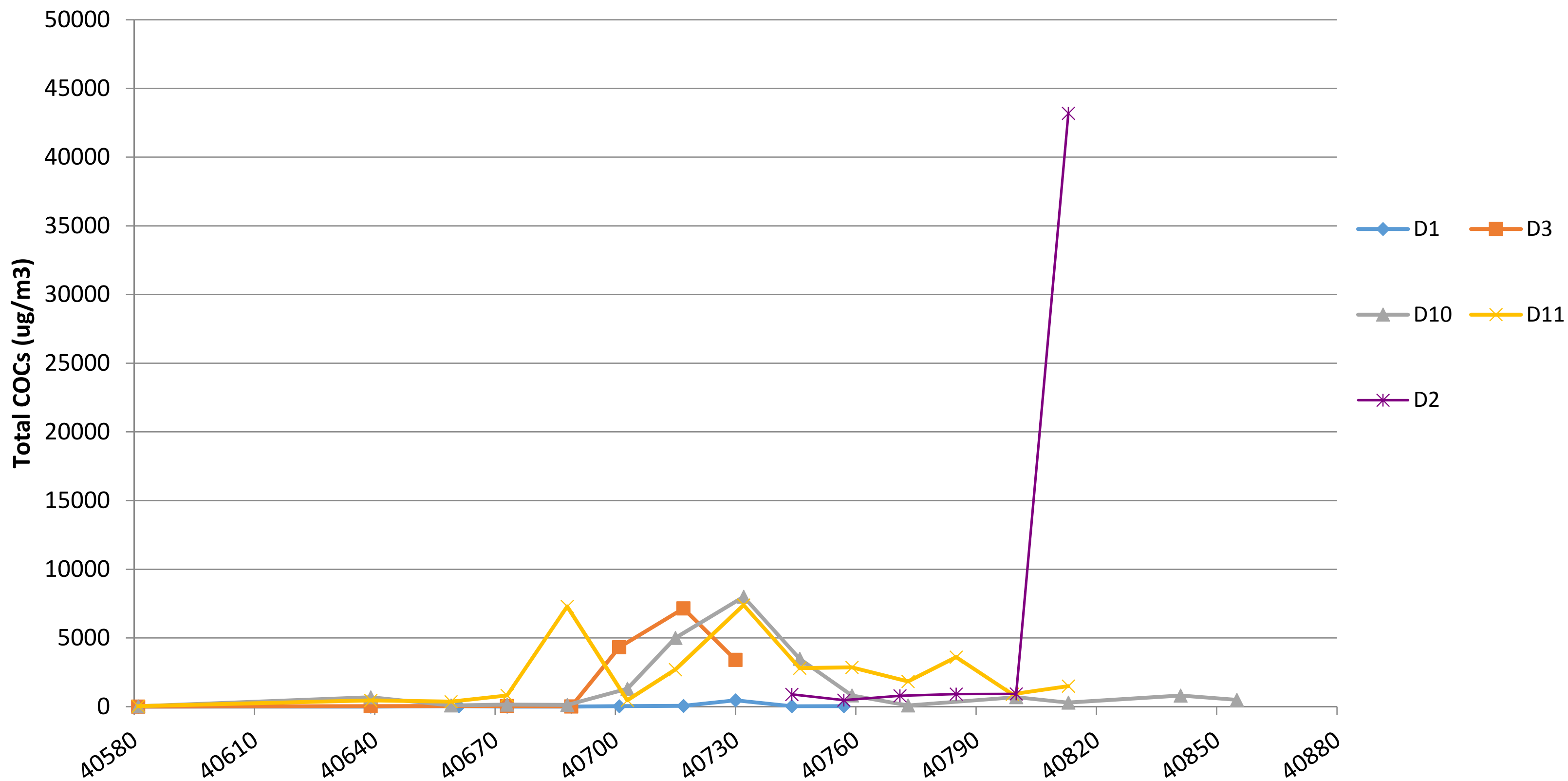


FIGURE 4-8

D-Row Electrode Concentrations, Stage 1

Frontier Fertilizer - Davis, CA

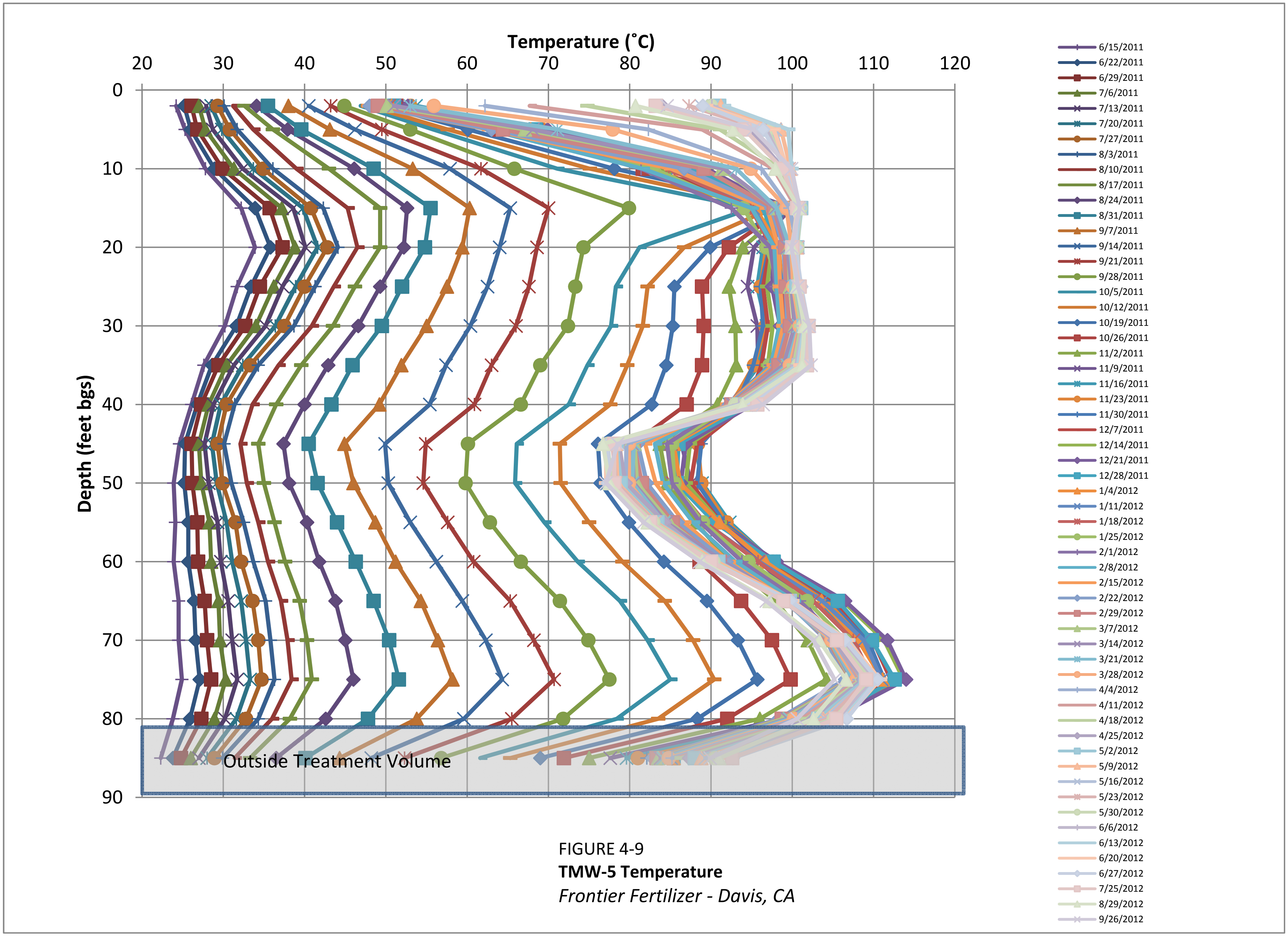


FIGURE 4-9

TMW-5 Temperature

Frontier Fertilizer - Davis, CA

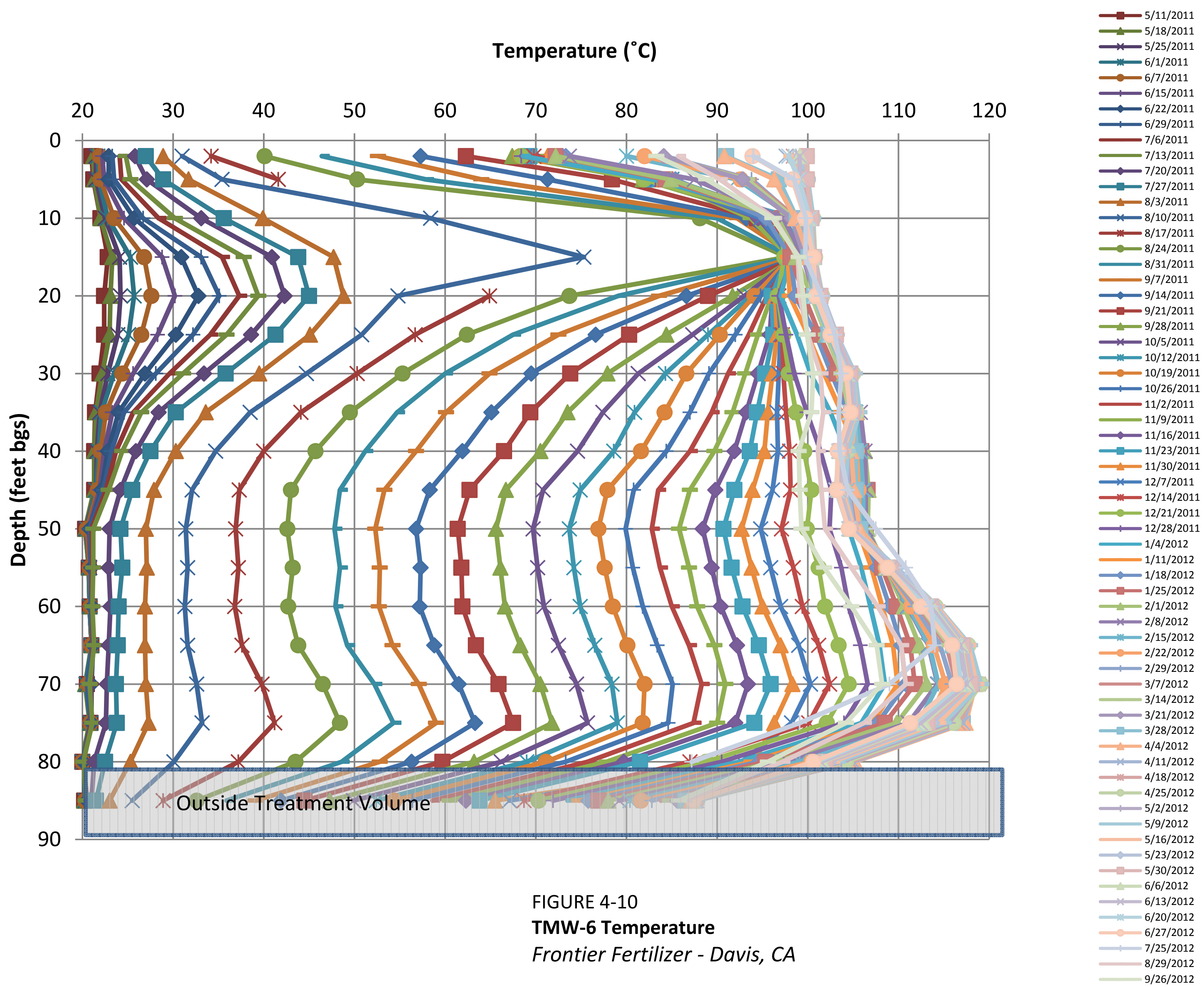


FIGURE 4-10

TMW-6 Temperature

Frontier Fertilizer - Davis, CA

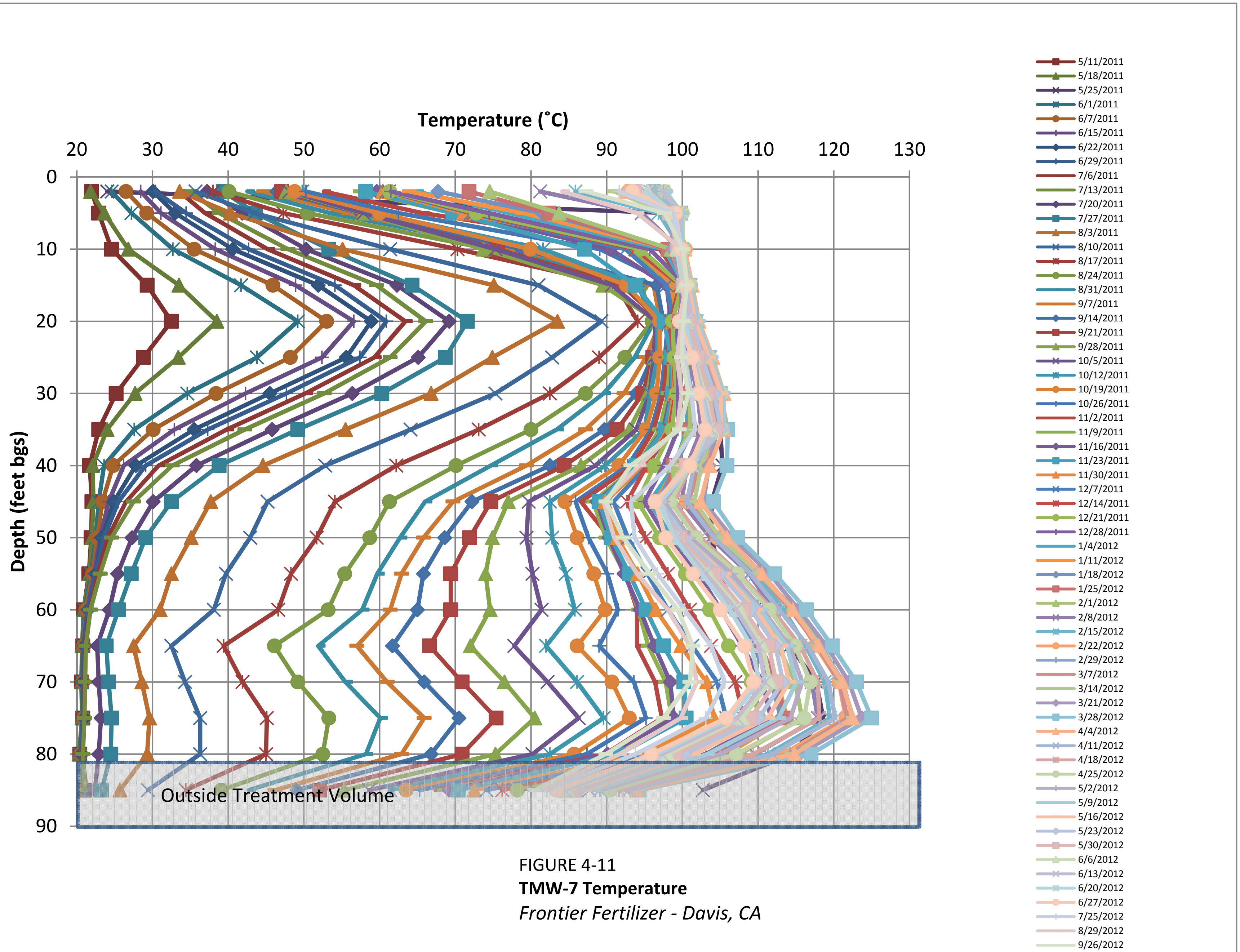


FIGURE 4-11

TMW-7 Temperature

Frontier Fertilizer - Davis, CA

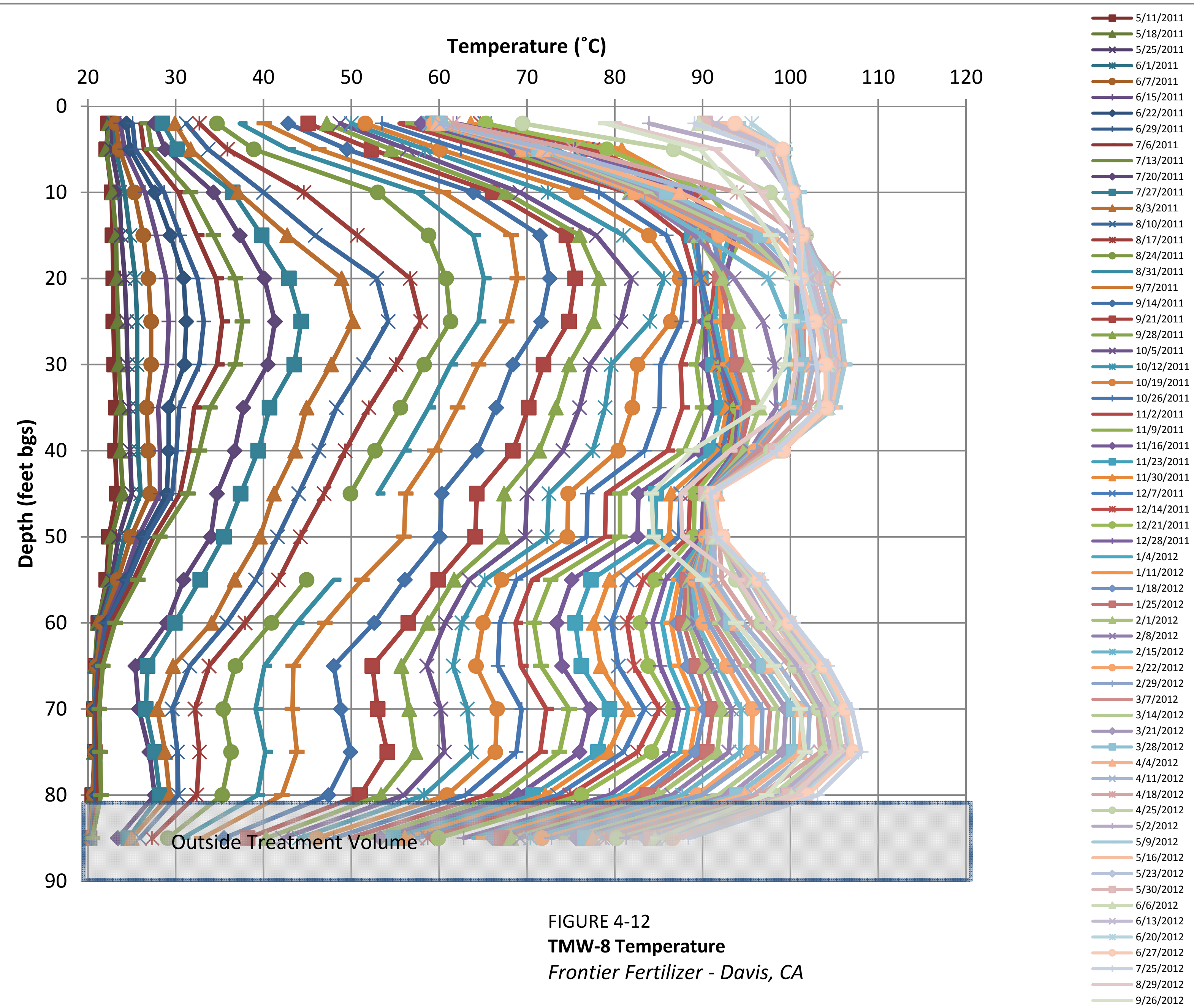


FIGURE 4-12

TMW-8 Temperature

Frontier Fertilizer - Davis, CA

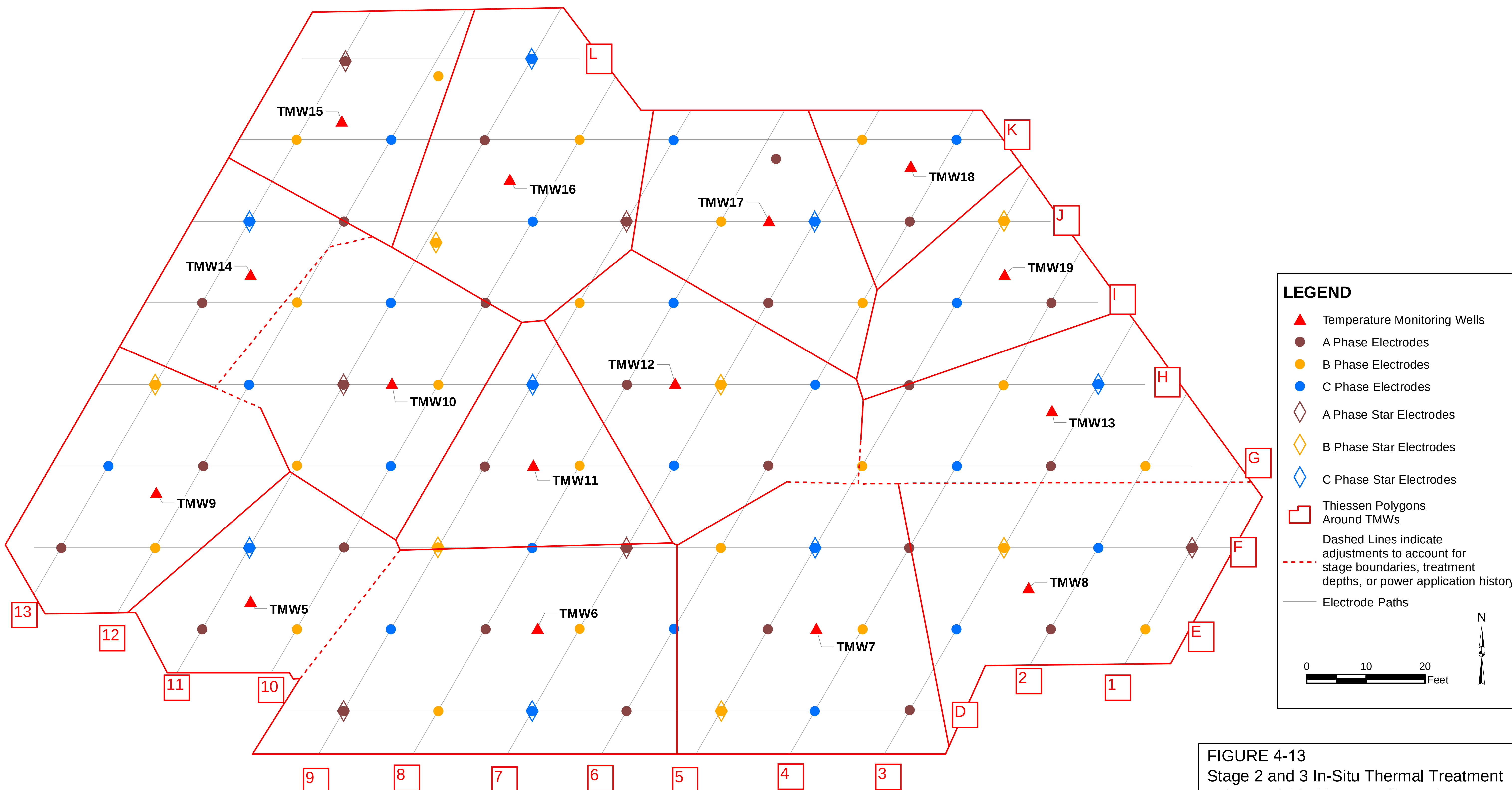
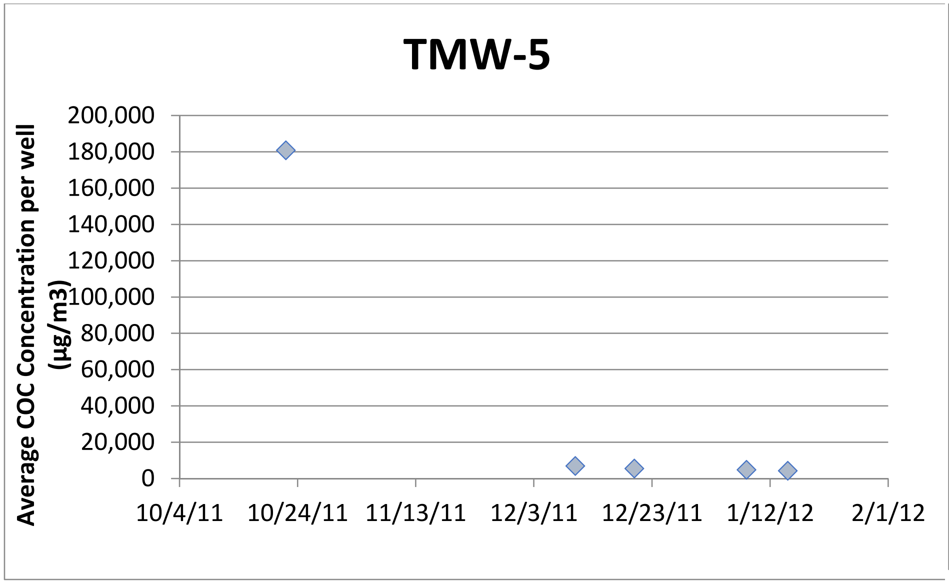


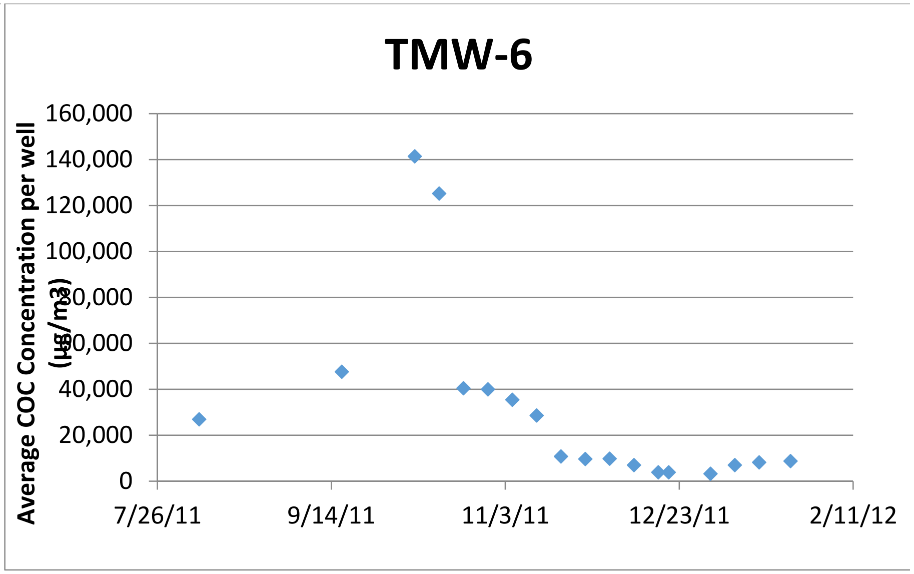
FIGURE 4-13
Stage 2 and 3 In-Situ Thermal Treatment Volume Divided into Smaller Volumes Around Temperature Monitoring Wells

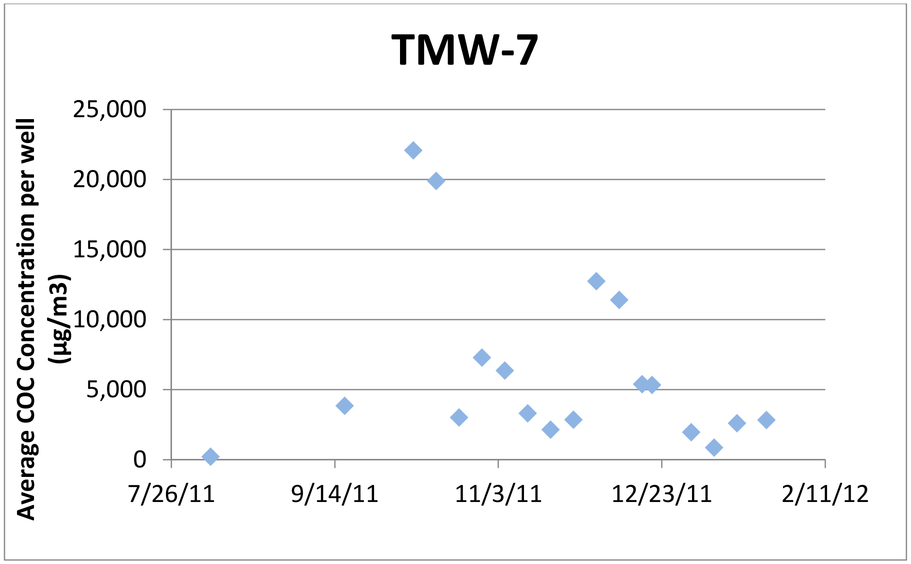
Frontier Fertilizer - Davis, CA

Path: P:\FrontierFertilizer\Quarterly_GW_Reports\Deliverable\Mapfiles\Thiessen\Theissien.mxd

CH2MHILL







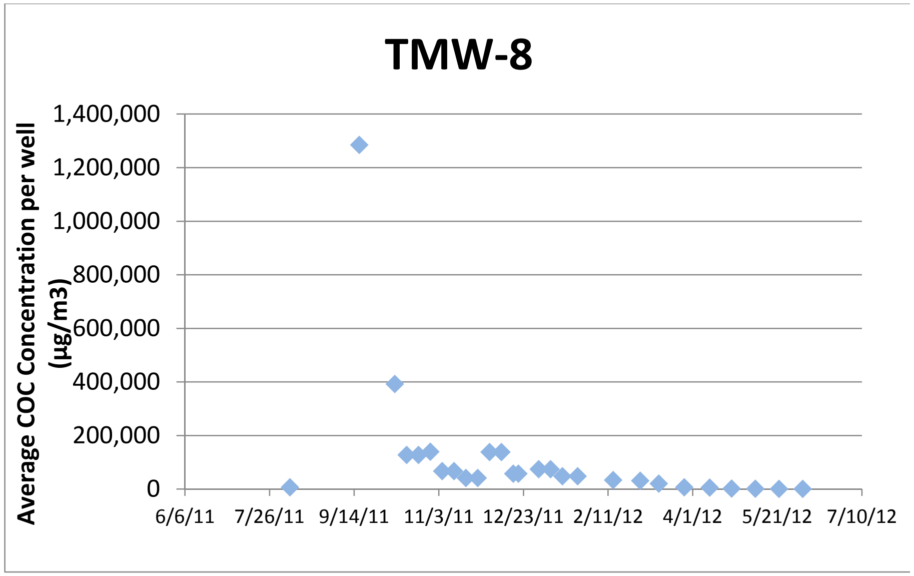


FIGURE 4-14
Stage 2 Average Total COC Concentrations
Frontier Fertilizer - Davis, CA

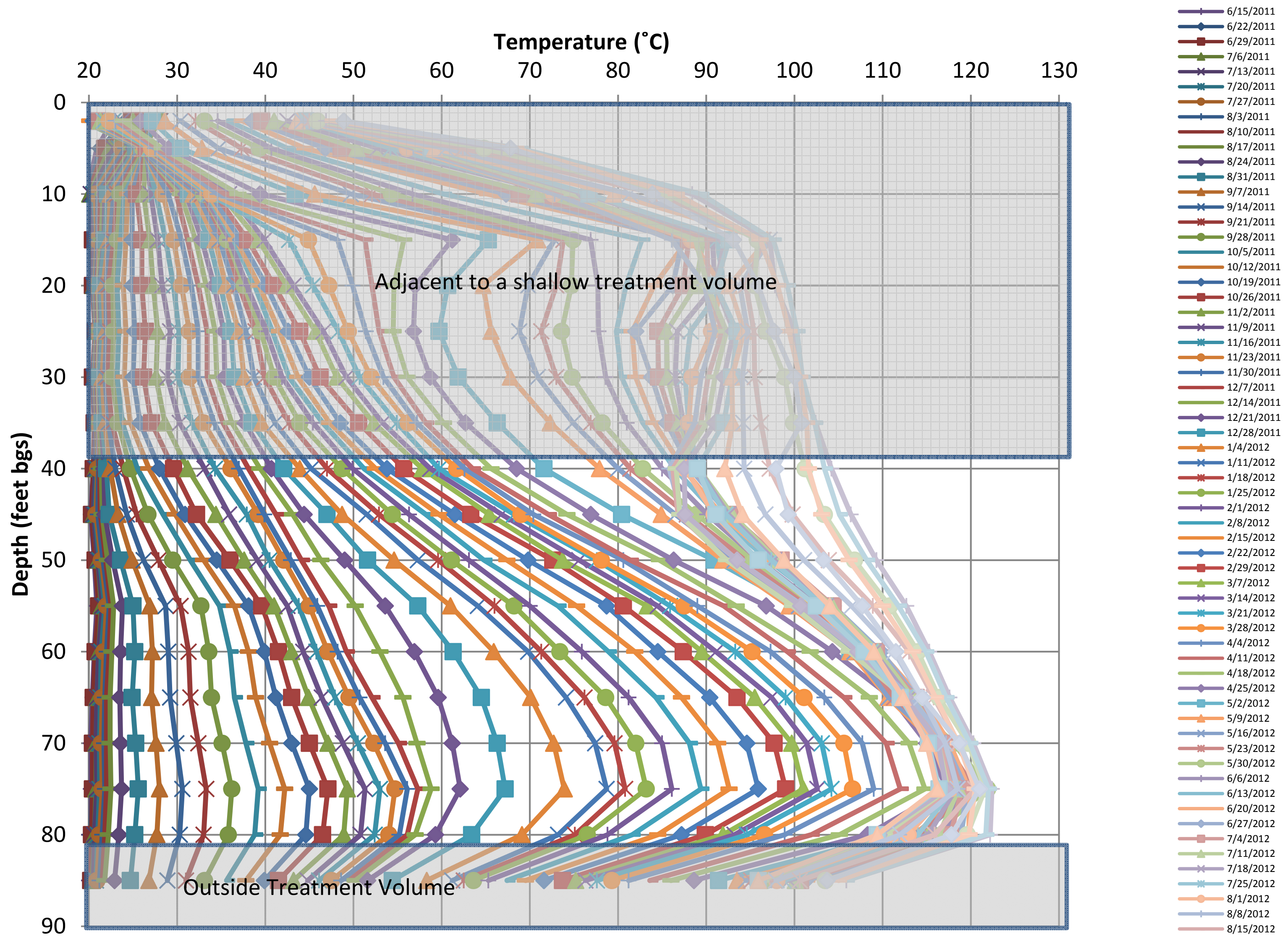


FIGURE 4-15

TMW-9 Temperature

Frontier Fertilizer - Davis, CA

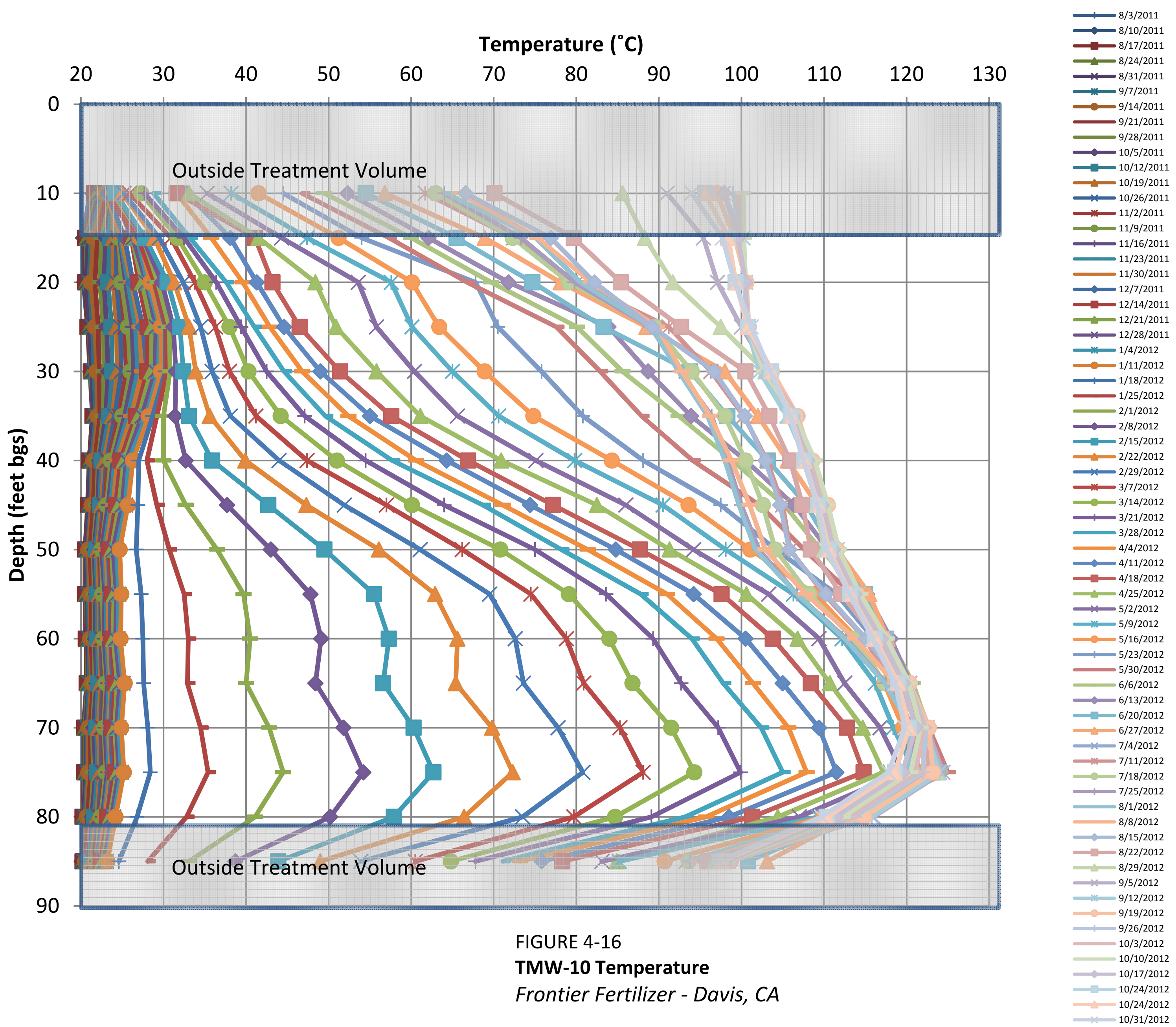


FIGURE 4-16

TMW-10 Temperature

Frontier Fertilizer - Davis, CA

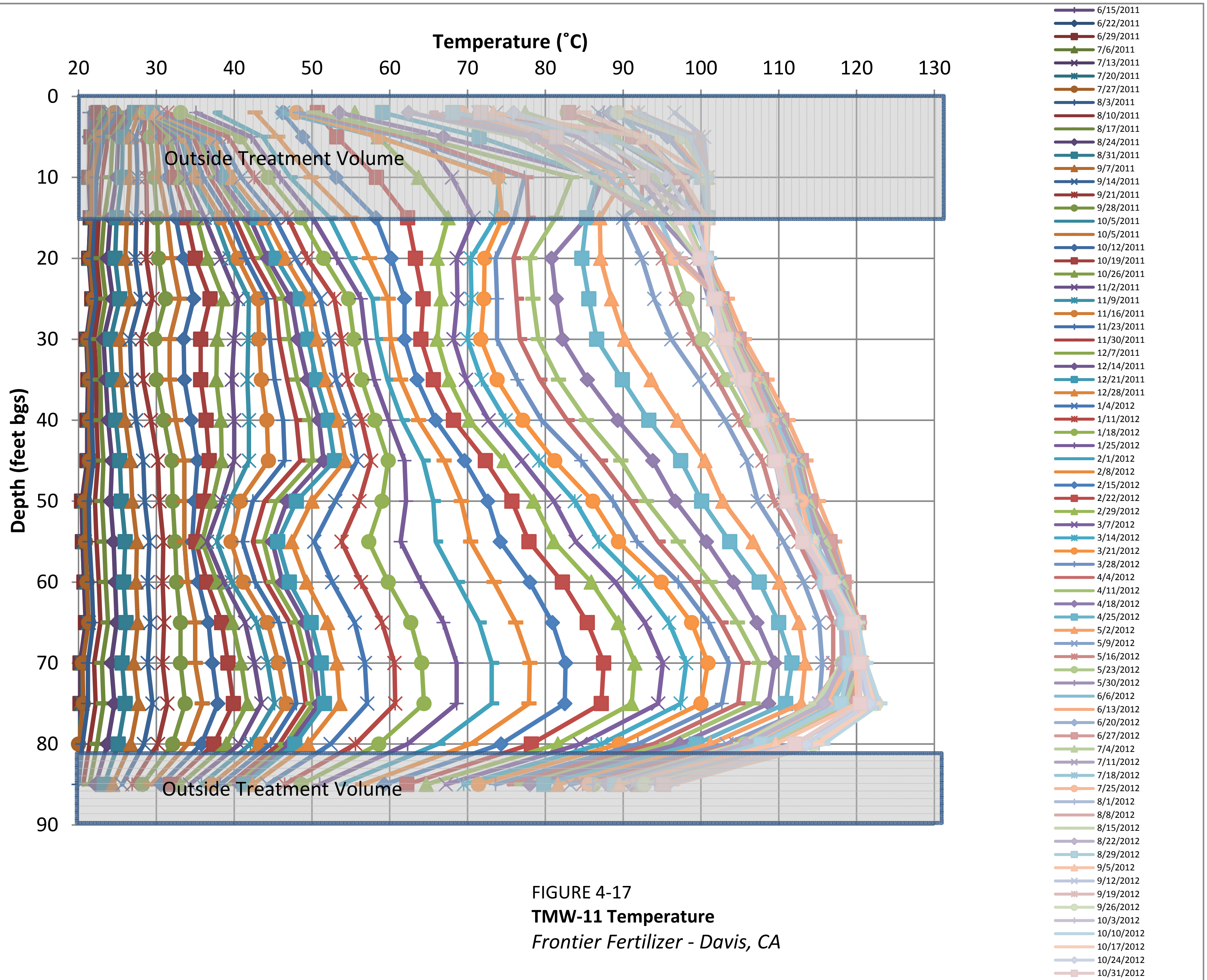


FIGURE 4-17

TMW-11 Temperature

Frontier Fertilizer - Davis, CA

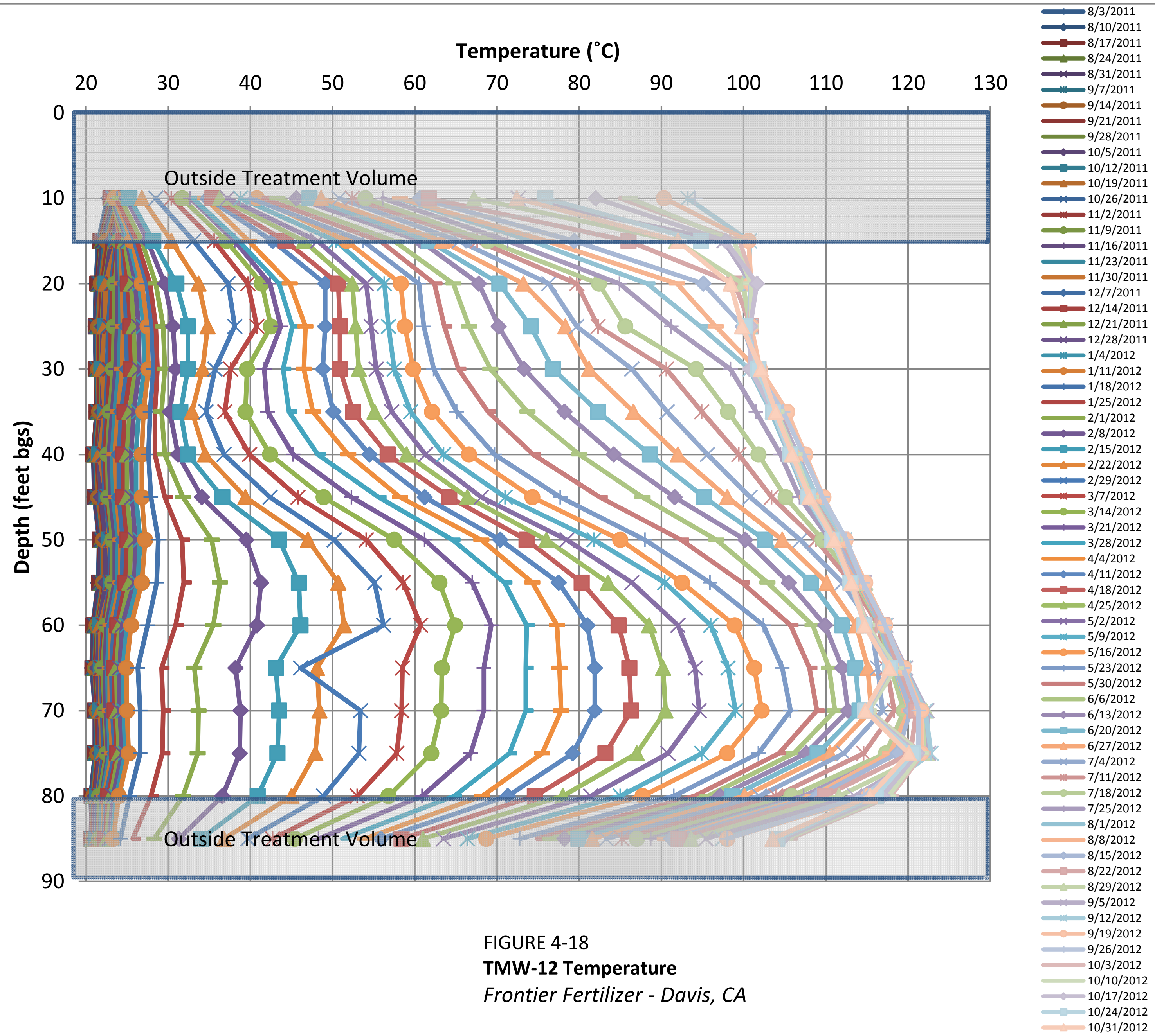


FIGURE 4-18

TMW-12 Temperature

Frontier Fertilizer - Davis, CA

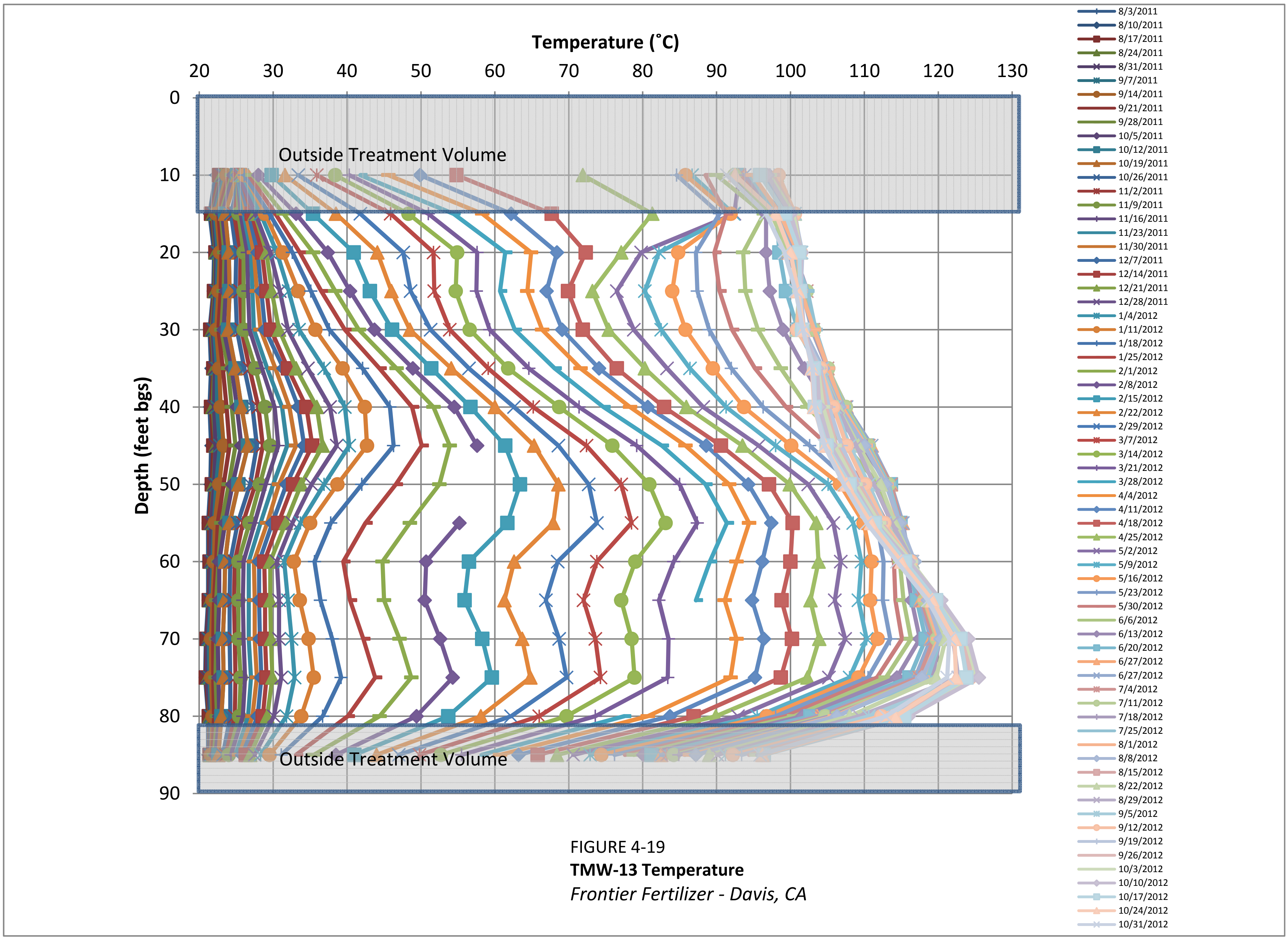


FIGURE 4-19

TMW-13 Temperature

Frontier Fertilizer - Davis, CA

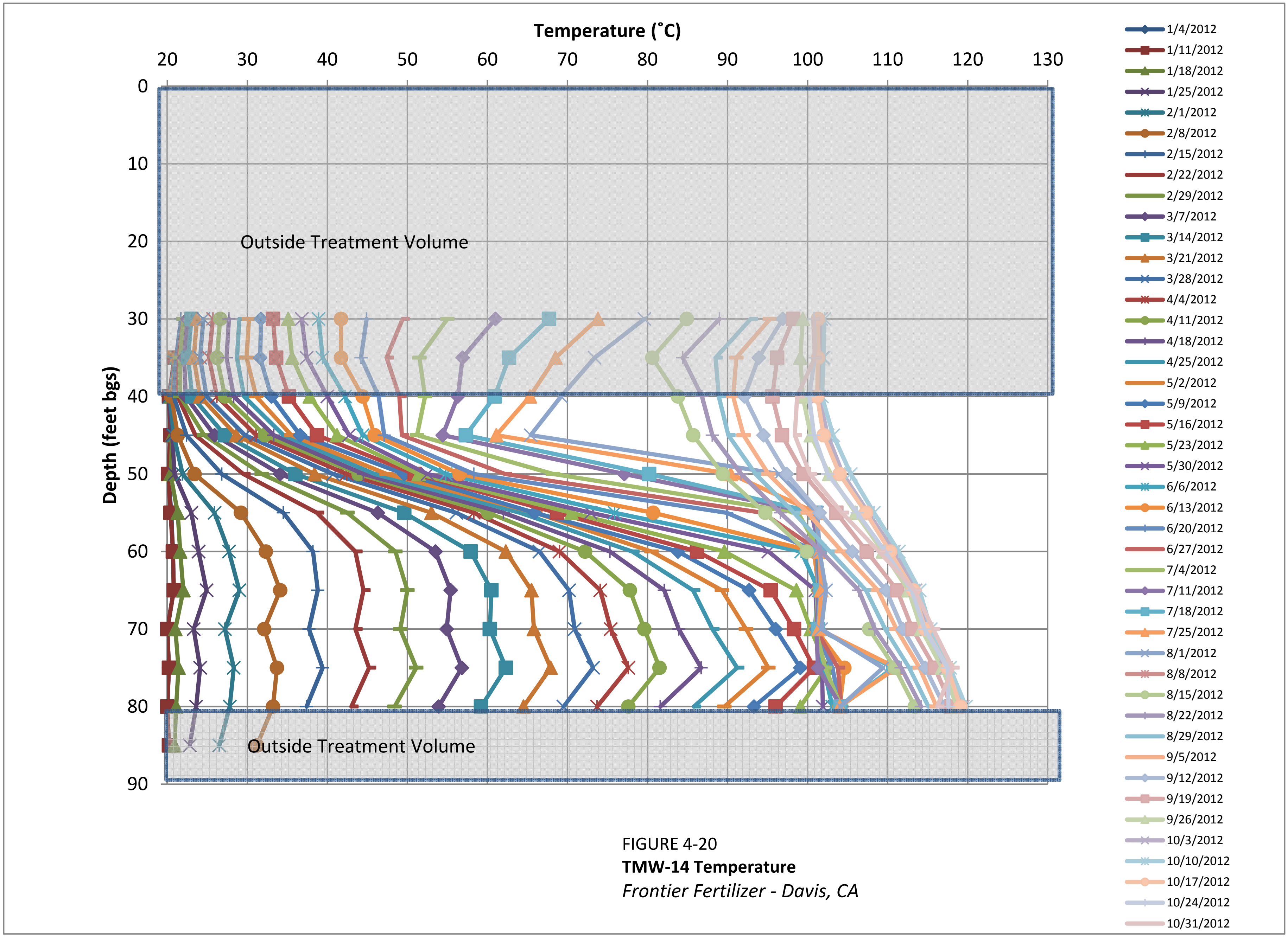


FIGURE 4-20
TMW-14 Temperature
Frontier Fertilizer - Davis, CA

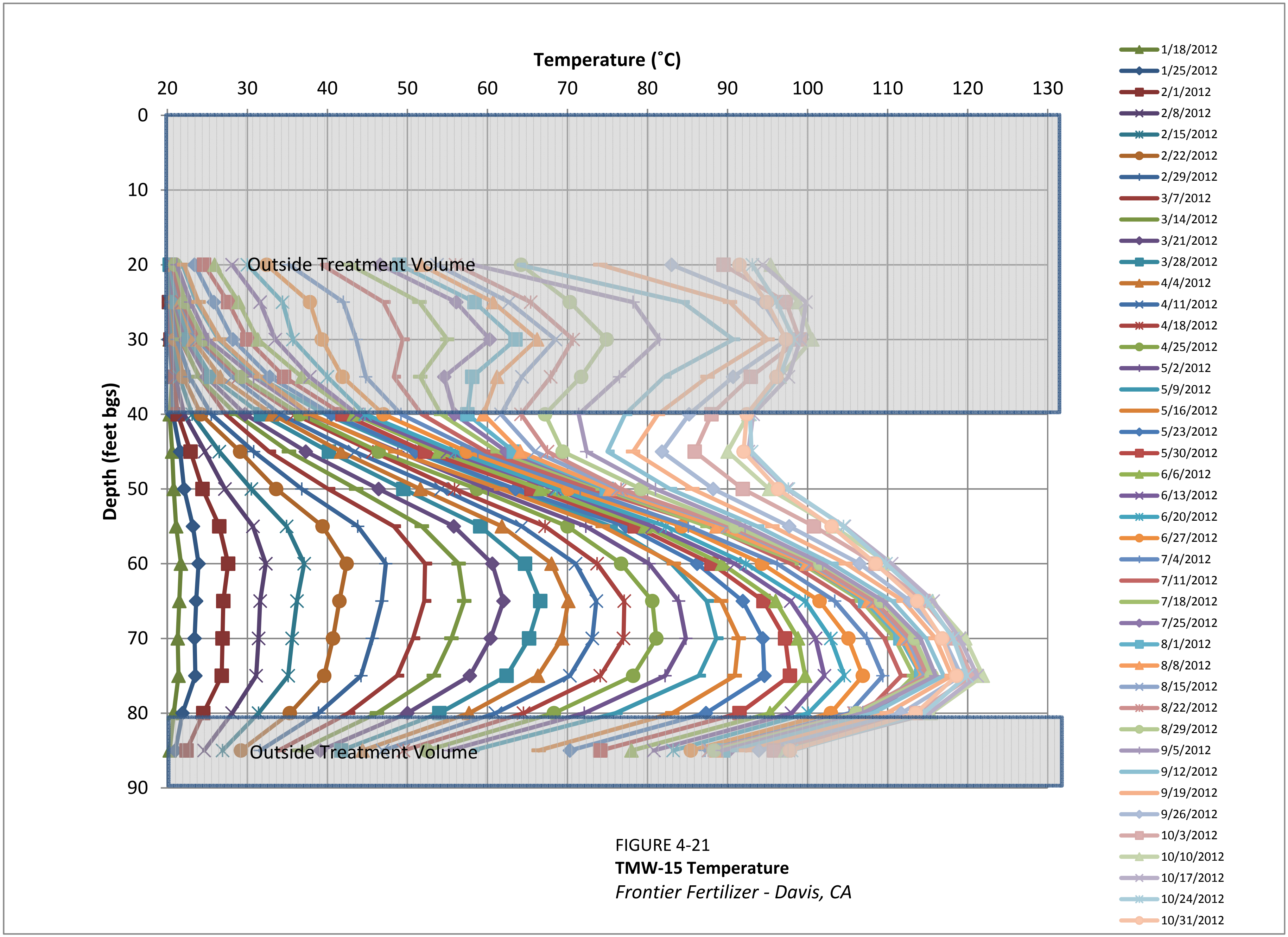


FIGURE 4-21
TMW-15 Temperature
Frontier Fertilizer - Davis, CA

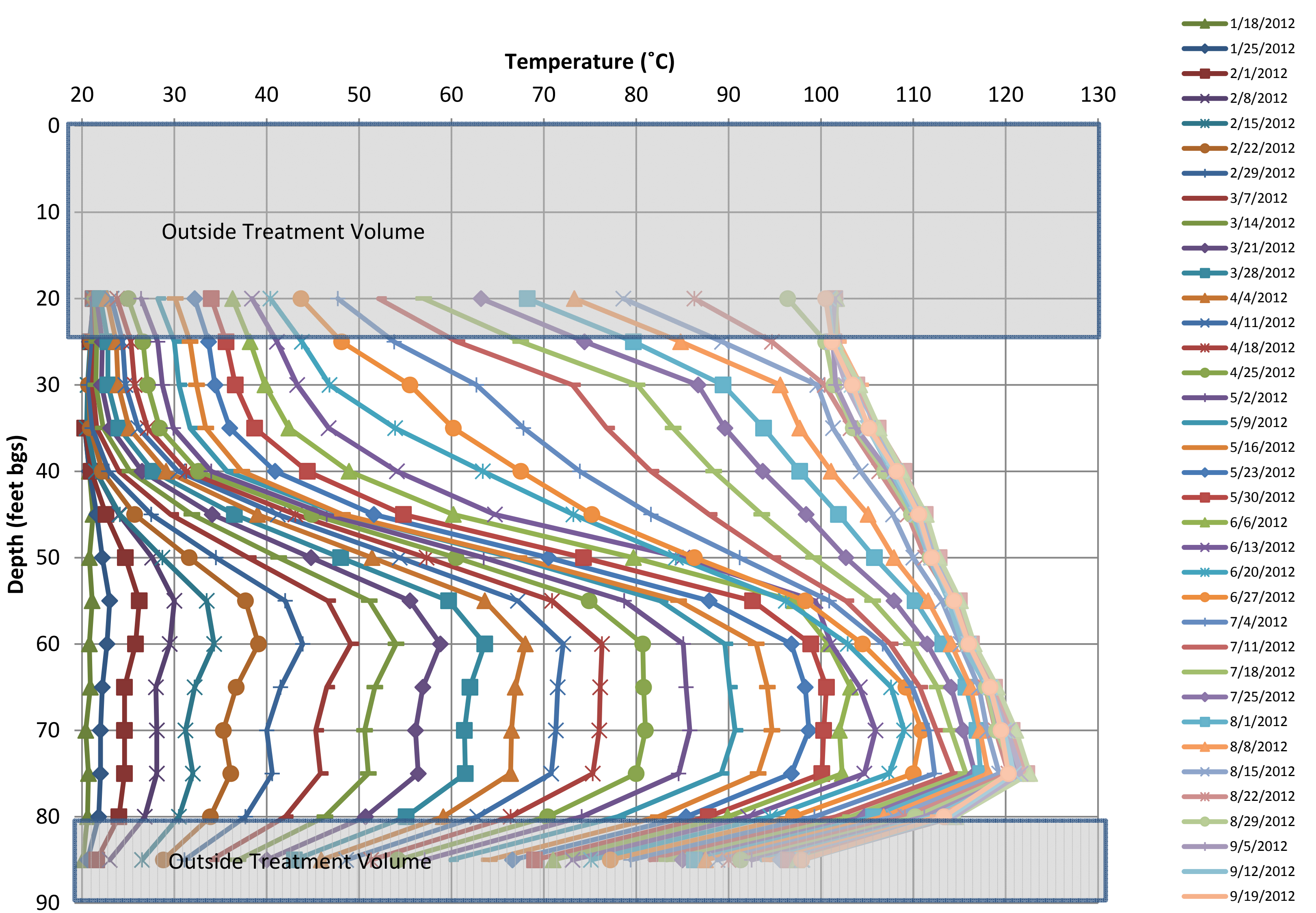


FIGURE 4-22

TMW-16 Temperature

Frontier Fertilizer - Davis, CA

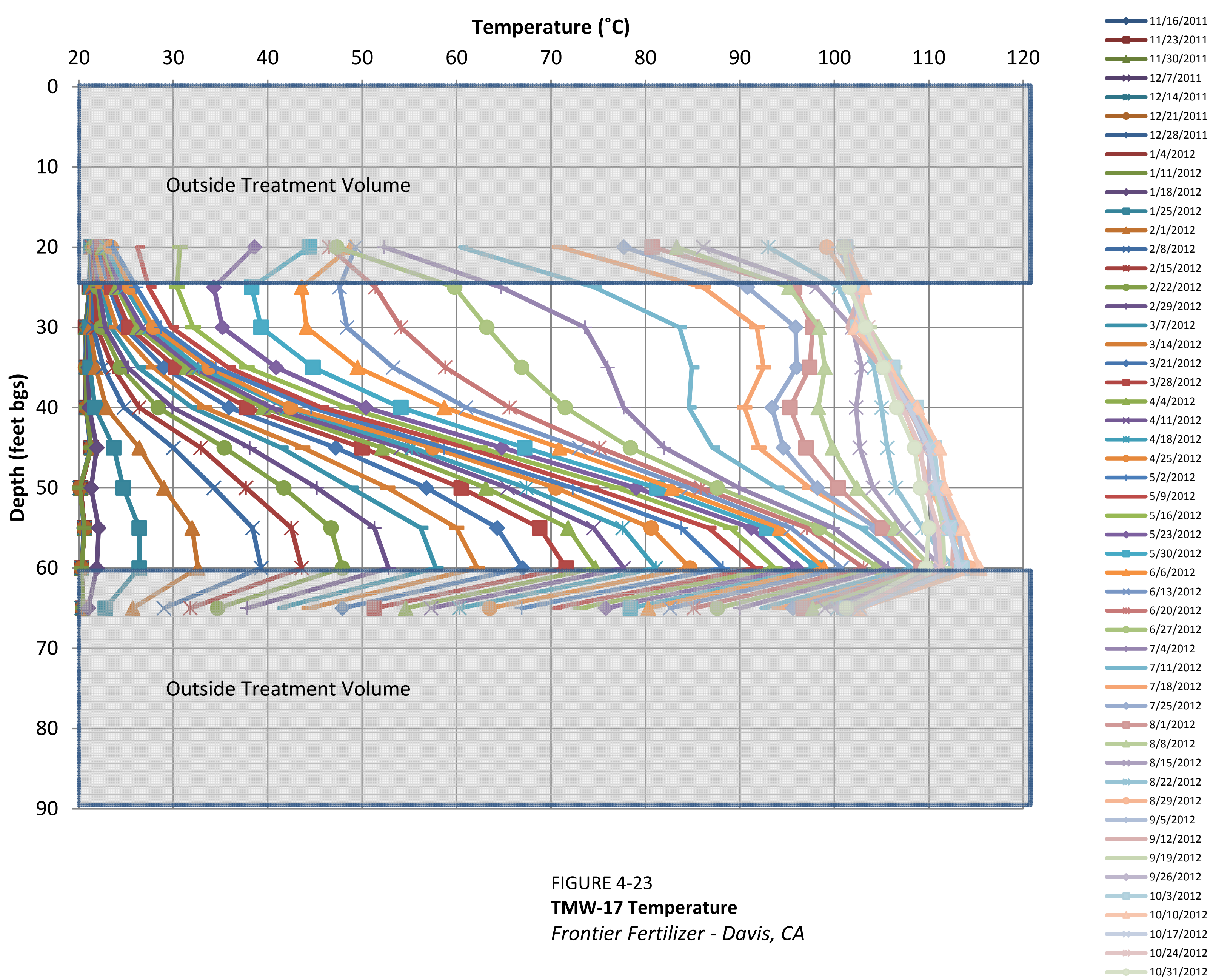


FIGURE 4-23

TMW-17 Temperature

Frontier Fertilizer - Davis, CA

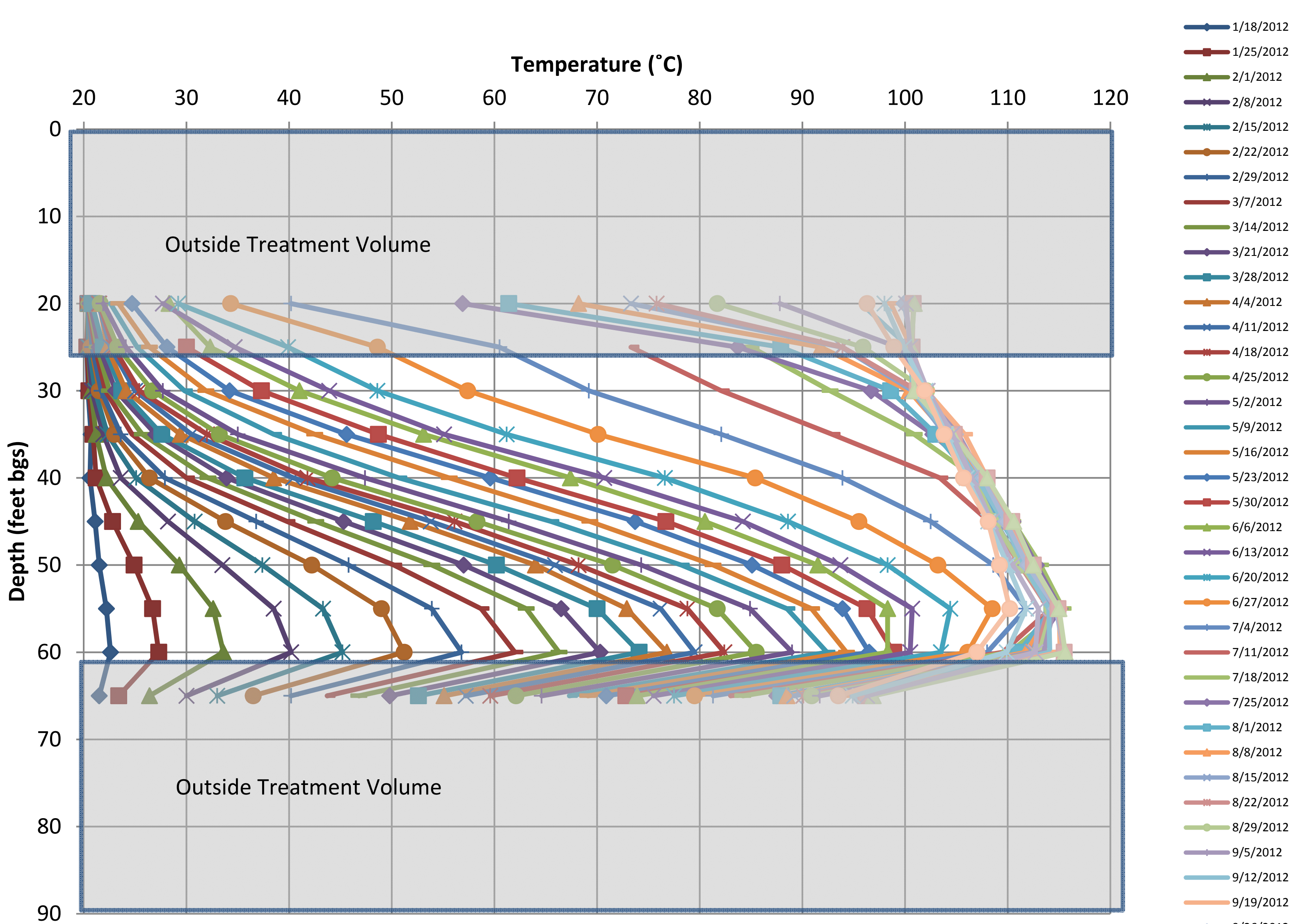


FIGURE 4-24

TMW-18 Temperature

Frontier Fertilizer - Davis, CA

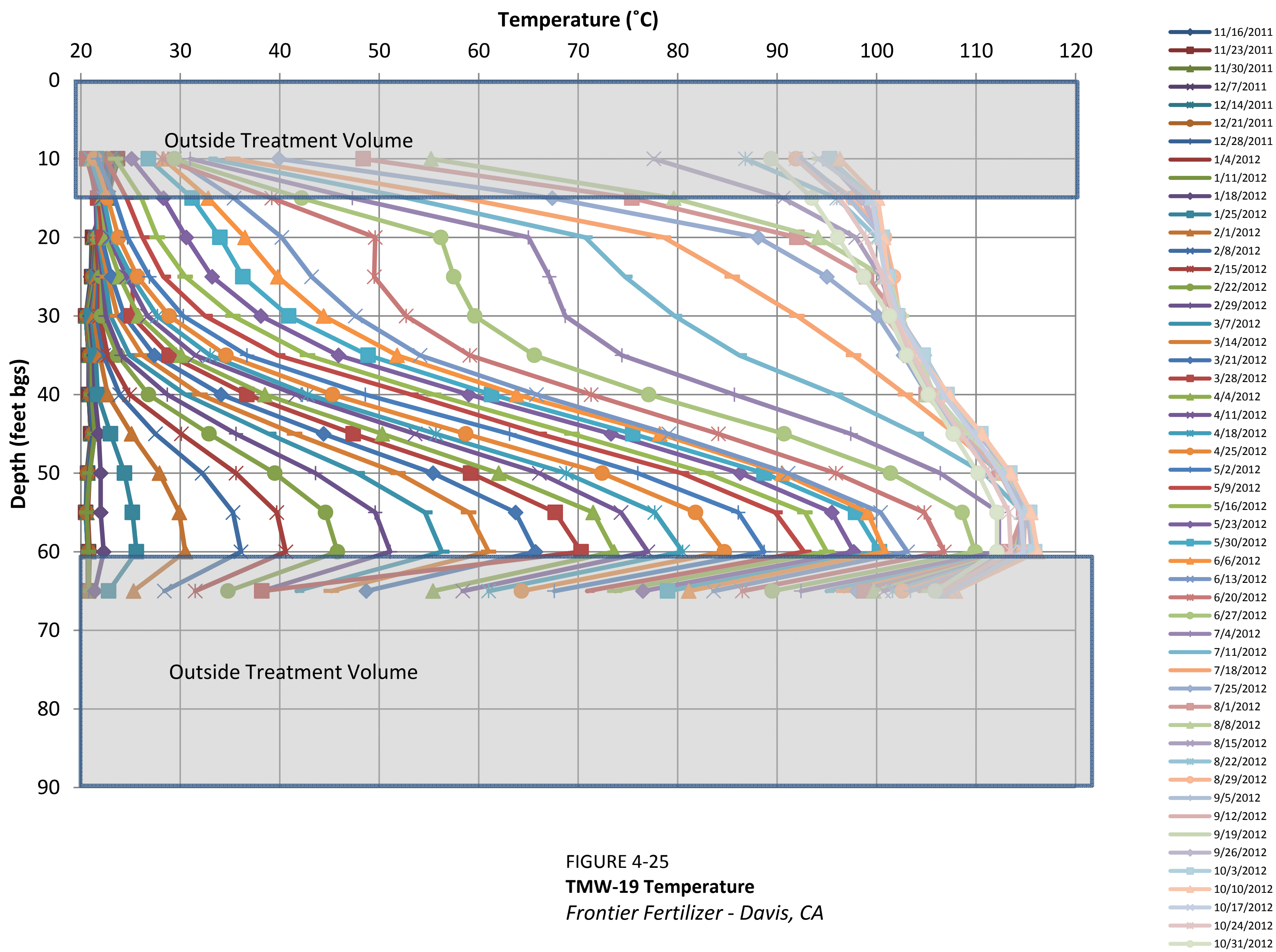


FIGURE 4-25

TMW-19 Temperature

Frontier Fertilizer - Davis, CA

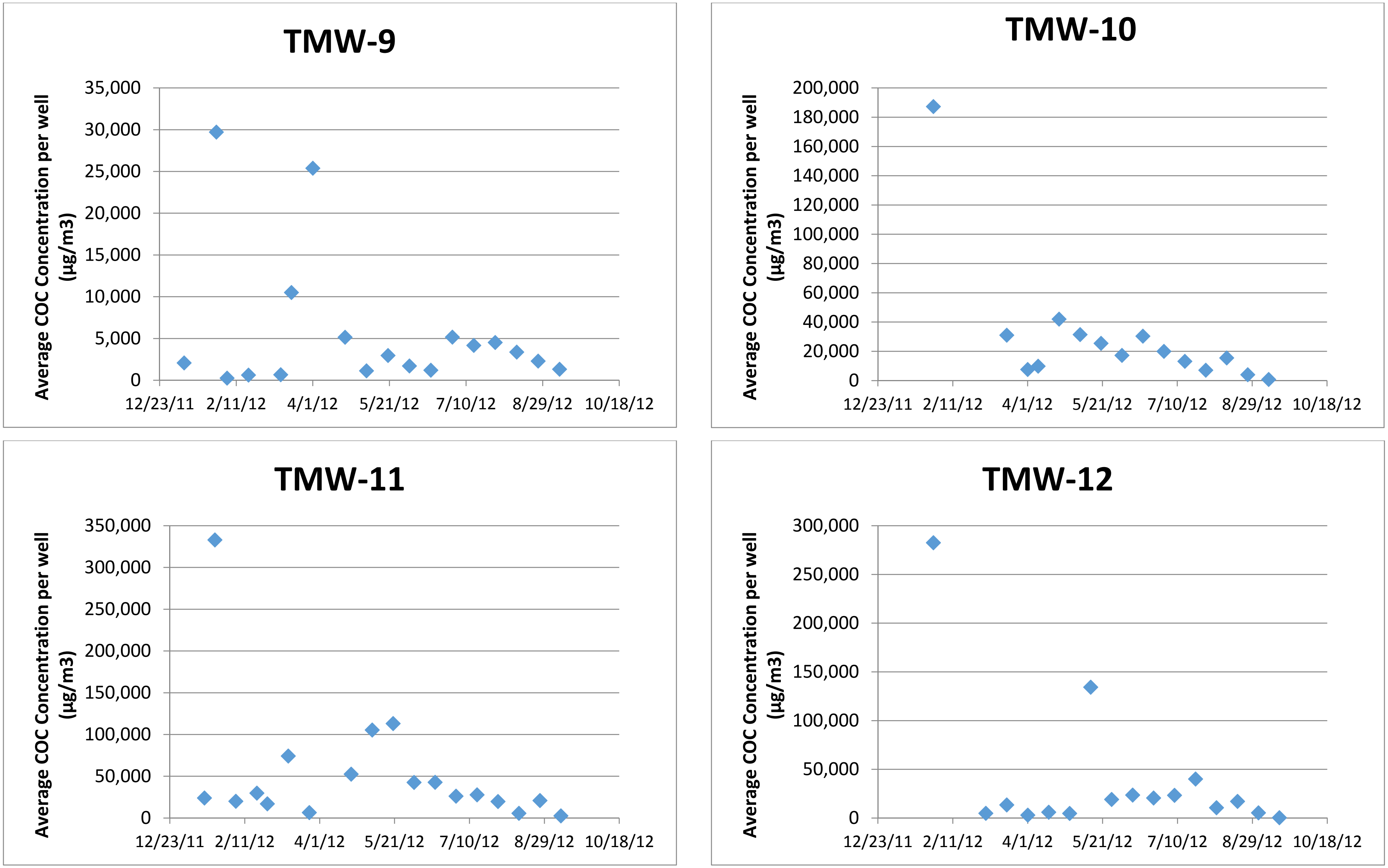
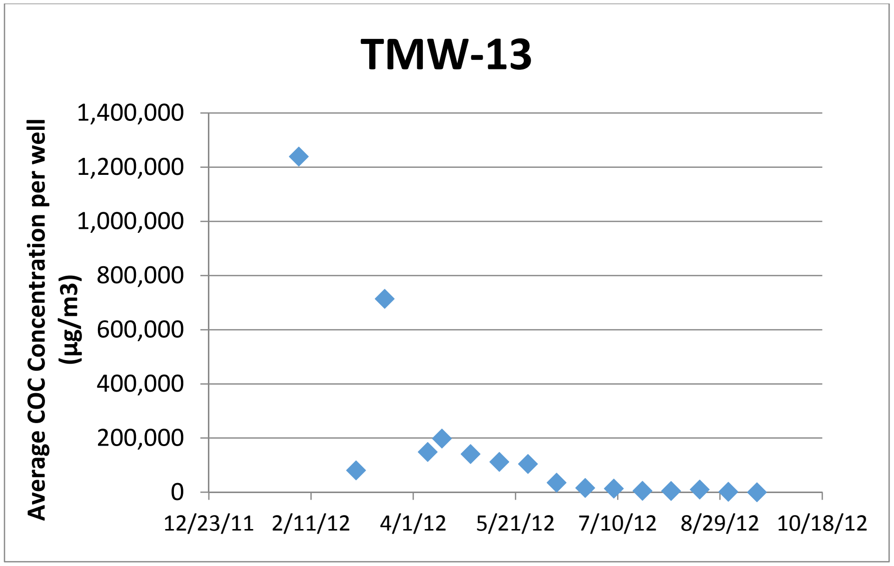
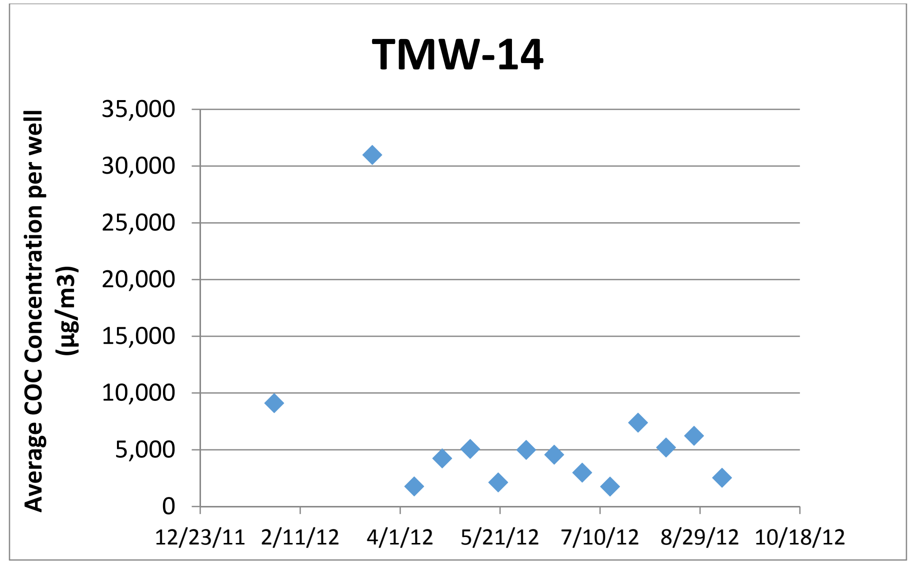


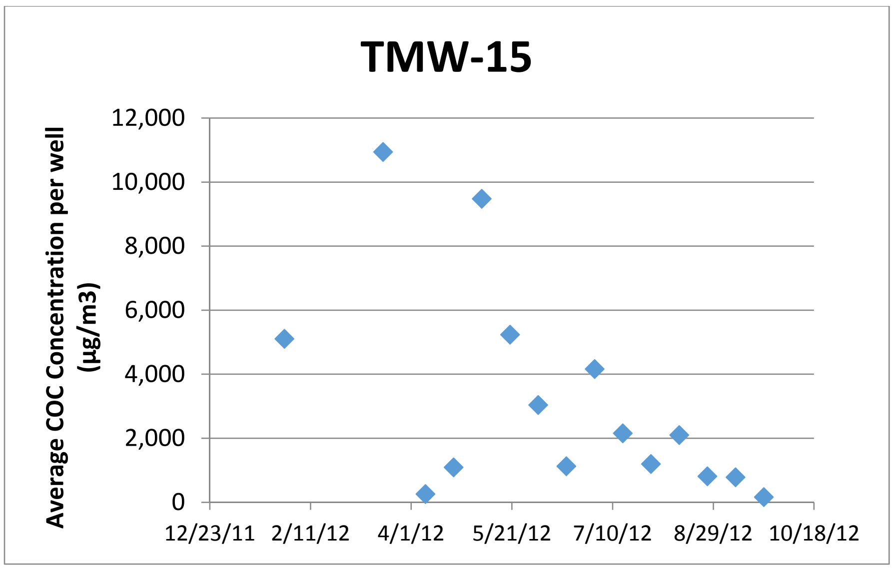
FIGURE 4-26

Stage 3 Average Total COC Concentrations: TMW-9 to TMW-12

Frontier Fertilizer - Davis, CA







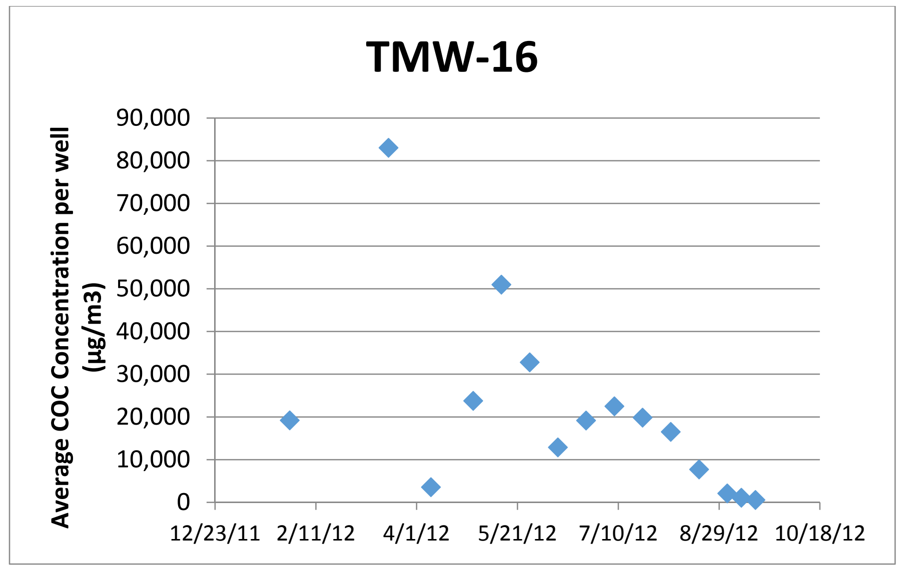
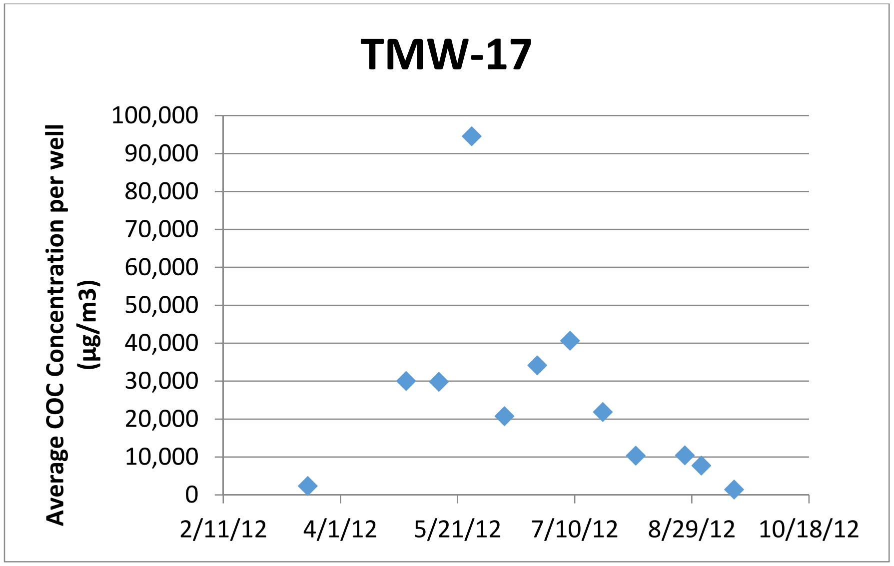
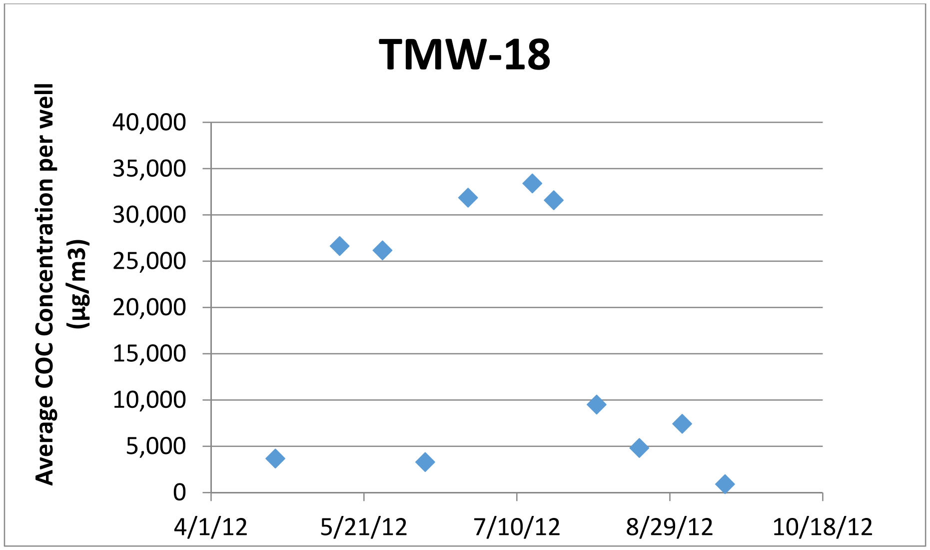


FIGURE 4-27

Stage 3 Average Total COC Concentrations: TMW-13 to TMW-16

Frontier Fertilizer - Davis, CA





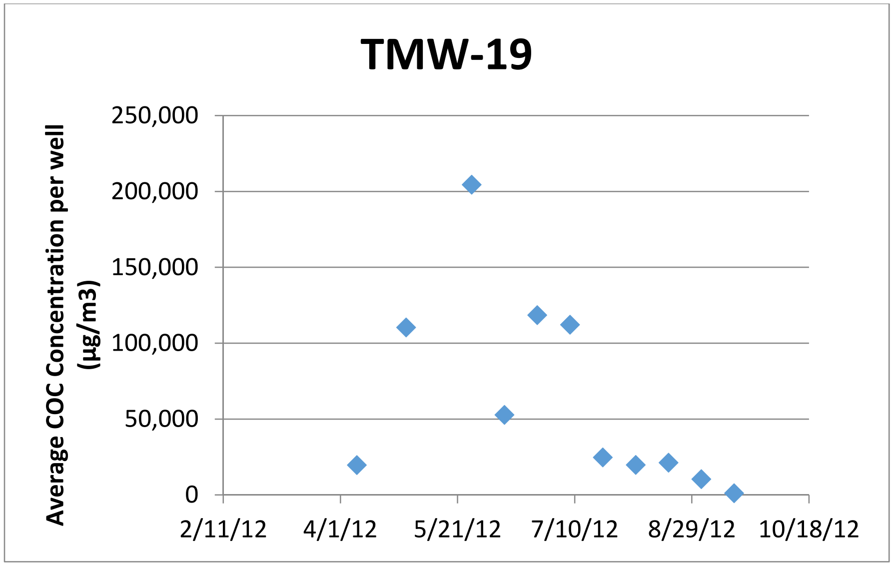


FIGURE 4-28

Stage 3 Average Total COC Concentrations: TMW-17 to TMW-19

Frontier Fertilizer - Davis, CA

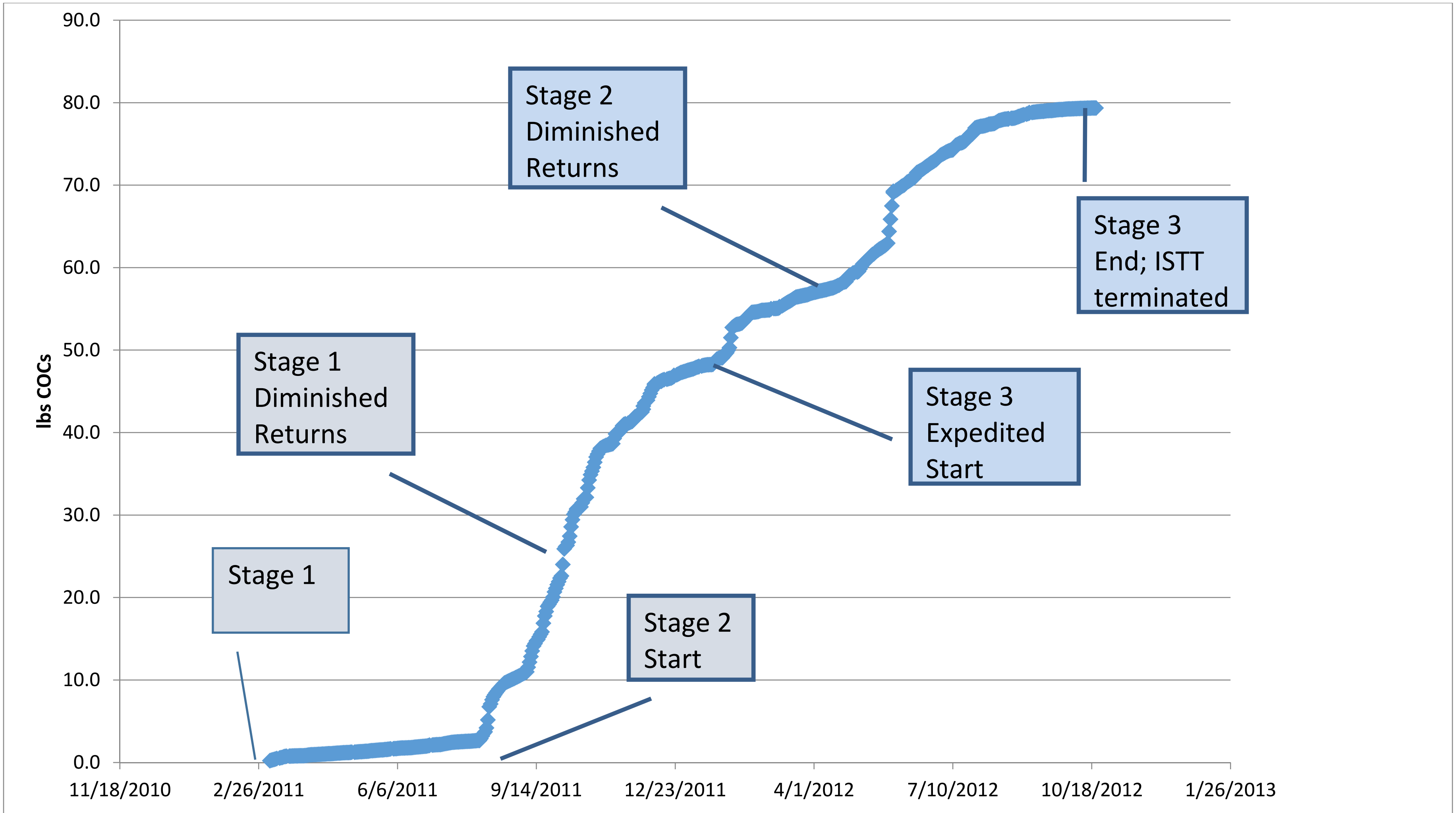


FIGURE 4-29
Cumulative COC Mass Removal
Frontier Fertilizer - Davis, CA

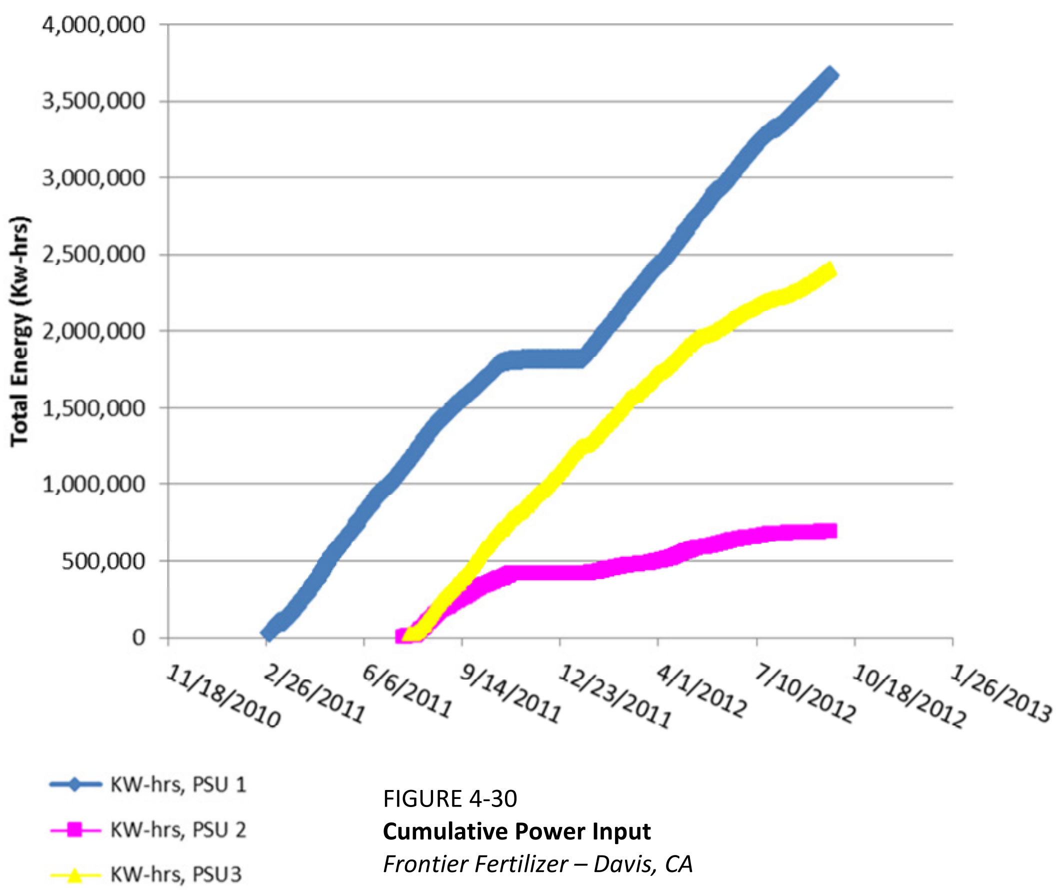


FIGURE 4-30
Cumulative Power Input
Frontier Fertilizer – Davis, CA

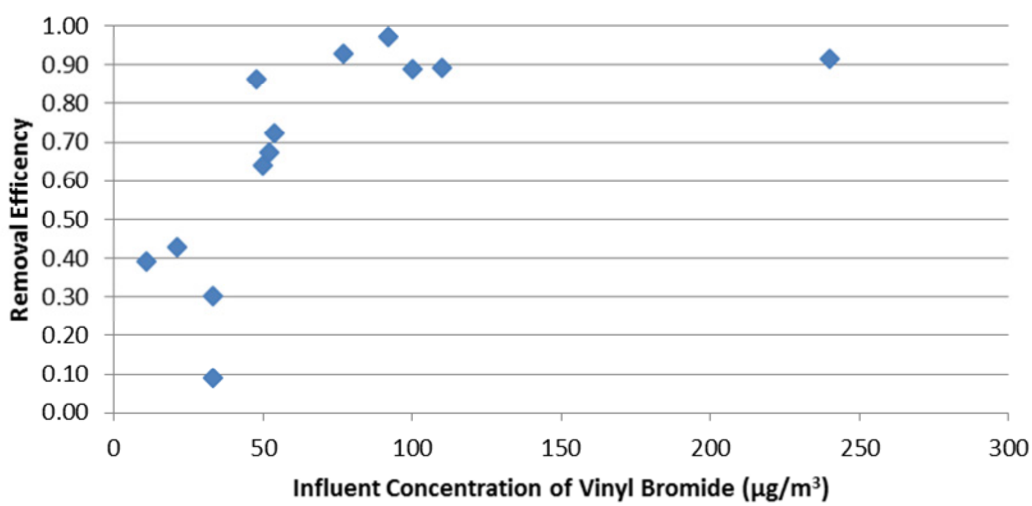


FIGURE 4-31
Vinyl Bromide Removal Efficiency
Frontier Fertilizer – Davis, CA

SECTION 5

Post-In Situ Thermal Treatment Objectives and Activities Performed

This section describes the objectives and methods used to accomplish the sampling field investigation objectives.

5.1 Objectives

The objective of post-ISTT sampling was to collect soil and groundwater samples to determine the amount of COC reduction that was achieved as a result of ISTT. The post-ISTT objectives are described in detail in *Addendum No. 1 to the Sampling and Analysis Plan for the In-Situ Thermal Treatment at Frontier Fertilizer NPL Site (March 2011)* (CH2M HILL, 2013).

5.2 Groundwater Sample Collection

The 26 ISTT wells in and around the ISTT volume were sampled between August 19 and 23, 2013, and on September 12 and 13, 2013. Well locations are identified on Figure 5-1.The 26 ISTT wells were sampled using Waterra dedicated sampling tube and foot valves with the Hydrolift II pump. Purged groundwater was passed through a flow cell for the Horiba U22 and monitoring for groundwater quality parameters, which included temperature, pH, specific conductance, turbidity, dissolved oxygen, and oxidation reduction potential (ORP). After stabilization criteria were achieved, the flow cell was removed from the discharge tubing and wells were sampled. At wells where elevated groundwater temperatures were encountered, groundwater was pumped through a stainless steel cooling coil and ice bath to lower temperatures and minimize volatile losses. Temperatures encountered during groundwater sampling ranged from approximately 22 to 98°C, with temperatures increasing from south to north across the ISTT volume.
All samples were analyzed for VOCs by the Multi-Media, Multi-Concentration, Organic Analytical Service for Superfund (SOM 01.2) method at the EPA Contract Laboratory Program (CLP); Shealy Environmental Services, Inc.; and for low level EDB, DBCP, and TCP by EPA Method 524.2 SIM at the EPA Region 9 Laboratory. Sample collection details are presented in Table 5-1 (Section 5 tables are presented at the end of this section).

5.2.1 Deviations

To resist the high temperatures of ISTT, many wells were constructed of 1-inch-diameter fiberglass casing, which created difficulties maintaining a constant water level using low flow sample techniques. Wells that could not sustain a low-flow sample method were purged of approximately three casing volumes, allowed to recharge for a day, and sampled. Field data sheets for each well are provided in Appendix C.

5.2.2 Drilling Permit and Utility Clearance

CH2M HILL obtained a drilling permit from the Yolo County Environmental Health Department on August 15, 2013 to support soil sampling drilling activities. Utilities were mapped by a geophysical survey performed at the site in 2007 (NORCAL, 2007). Because the investigation area has been fenced and no subsurface work other than ISTT has been performed since 2007, an additional utility location was not performed. The Underground Service Alert Ticket was 0317547.

5.2.3 Soil Sampling

Thirteen borings were advanced in the ISTT volume to depths up to 80 feet bgs. Specifically, borings SB-06 and SB-07 were advanced to 40 feet bgs; boring SB-17 was advanced to 60 feet bgs, and the remaining borings (SB-08 through SB-16 and SB-18) were advanced to 80 feet bgs. Boring locations are shown on

Figure 5-2. Borings were advanced to obtain continuous soil cores for the collection of soil samples. Continuous soil cores were advanced using a Supersonic II model sonic rig. Soil cores were retrieved from the 3.5-inch outer-diameter core barrel of the rig. Core barrels were advanced in 10-foot runs (two 5-foot core barrels threaded together). Once retrieved, core barrels were split (unthreaded from each other), and a soil core temperature was obtained by pushing a thermometer into the soil at the end of each 5-foot core barrel. Pre-ice bath soil temperatures ranged from approximately 48 to 105°C, with temperatures increasing from south to north across the ISTT volume. After an initial soil temperature was obtained, the core barrel was capped (to prevent loss of volatiles) and placed in an ice bath until soil temperatures reached 35°C. After the target cooling temperature of 35°C had been achieved, soil cores were then extruded into plastic bags, where they were quickly transferred to a sample table, scraped on the outer surface and screened with a photo-ionization detector (PID; 11.7 eV lamp). The portion of soil that exhibited the highest PID response was sampled. Most soil cores did not exhibit a PID response. Where soil cores did not exhibit a PID response, soil samples were collected from as close to the originally planned depths. Sample collection was accomplished by splitting the core in half and quickly filling 5-gram Encore sample containers with soil from the middle of the core.

Soil samples were analyzed for VOCs by method SOM 01.2 at CLP Shealy Environmental Services, Inc. Shallow soil (less than or equal to 10 feet bgs) was also analyzed for low-level EDB, DBCP, and TCP by Modified 8260 at DHL Analytics. Soil sample depths and methods are presented in Table 5-2.

5.2.4 Boring Decommissioning

Borings were decommissioned using neat cement grout to the surface as per the Yolo County Boring Permit and as required by Department of Water Resources Monitoring Well Standards Bulletin 74-90. For locations on the cap, grouting was stopped at the soil line, or about a foot below the cap.

5.2.5 Deviations

Because of ISTT subsurface infrastructure, the sample locations had to be modified slightly in the field. The final boring locations are accurately depicted on Figure 5-2.

At the time the addendum to the SAP was drafted and finalized, no laboratory was identified that could provide reporting limits as low as the soil RAOs for EDB, DBCP, and TCP. A laboratory was identified prior to mobilization, and samples at or shallower than 10 feet below original grade were also sent to the alternative laboratory for analysis for EDB, DBCP, and TCP at low levels.

At a few locations, extremely wet soil was encountered during drilling. Since core barrels were advanced in 10-foot runs (two 5-foot core barrels threaded together), where wet soil was encountered, the core could not be split into two 5-foot barrels for cooling because the hot soil would have flown freely from the barrel. A 10-foot-long core barrel was too long for placement in the ice bath; thus, where saturated soils were encountered, cores had to be cooled by placing the core barrel on visqueen, elevated by cinder blocks, and covered in 7-pound bags of ice along the entire length.

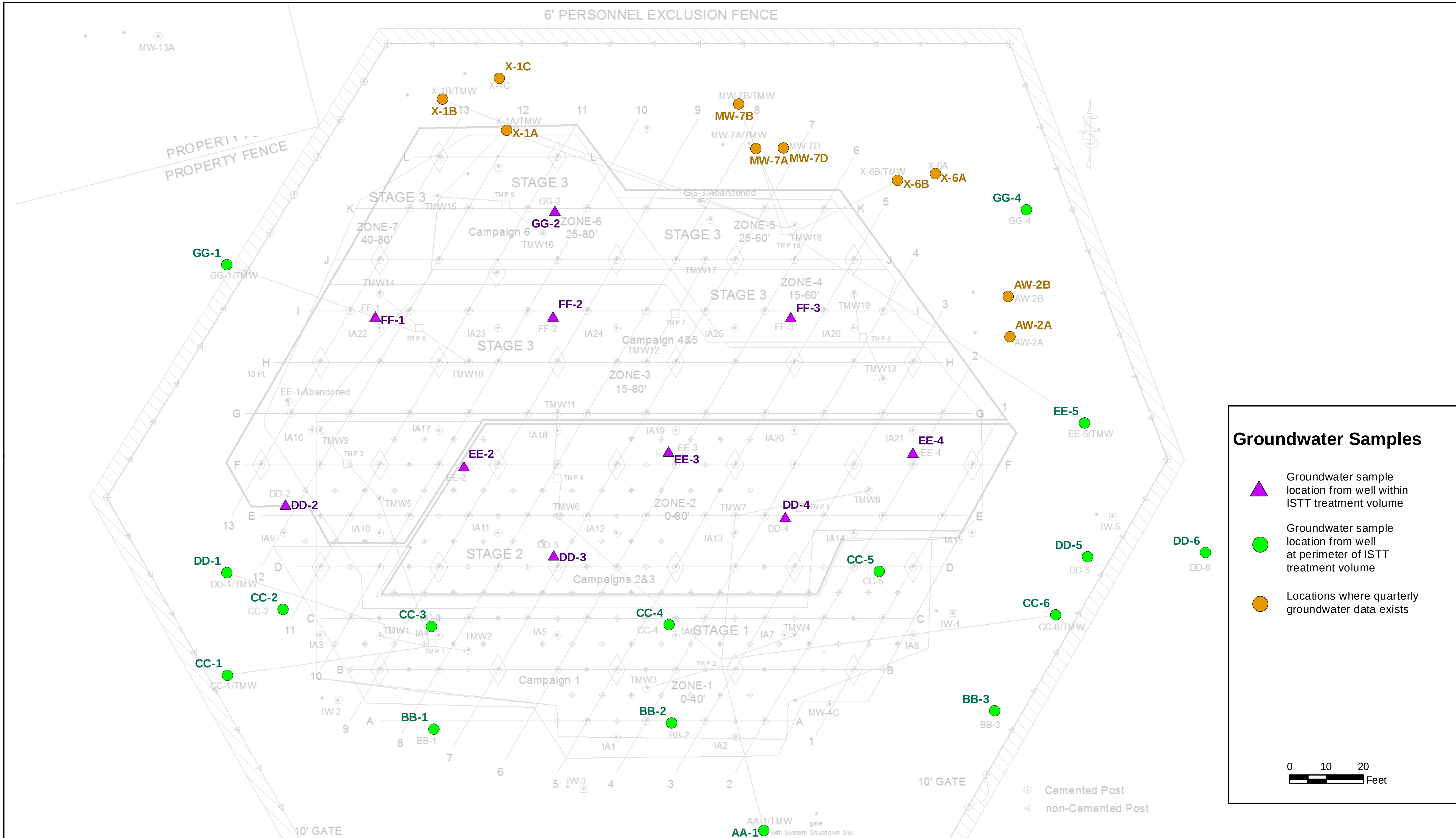


FIGURE 5-1
Groundwater Sampling Locations
Frontier Fertilizer - Davis, CA

Path: D:\FrontierFertilizer\Quarterly_GW_Reports\Deliverable\Mapfiles\Thiessen\Theissien4.mxd

CH2MHILL

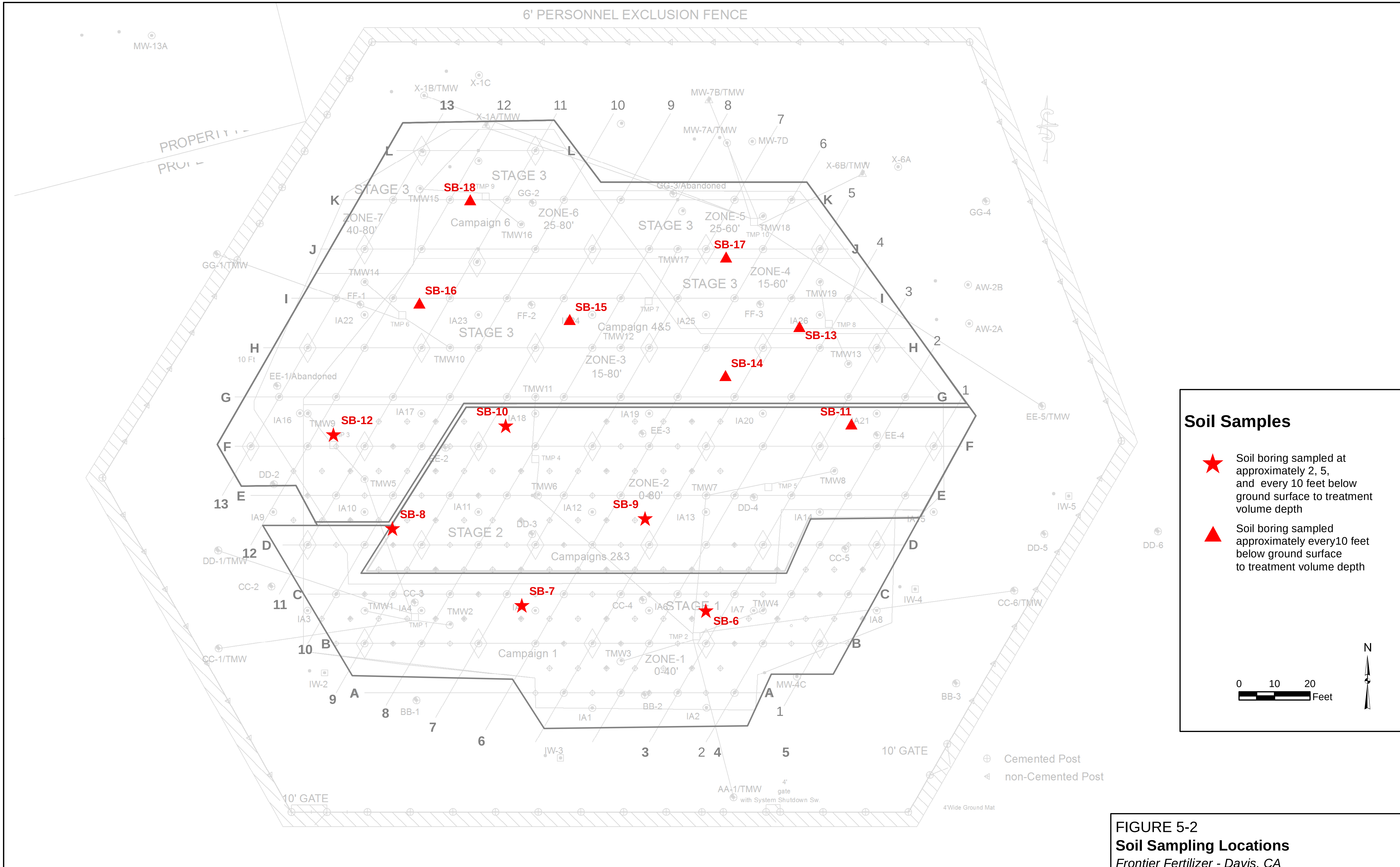


FIGURE 5-2
Soil Sampling Locations
Frontier Fertilizer - Davis, CA

TABLE 5-1
Groundwater Sample Collection and Analysis
Frontier Fertilizer Superfund Site, Davis, California

Location	Field ID	CLP ID	QA/QC Type	Matrix	Sample Date	Method
AA1	AA1-A654		N	GW	08/19/13	E524.2SIM
	AA1-A654	Y8ZZ6	N	GW	08/19/13	SOM01.2
BB1	BB1-A654		N	GW	08/23/13	E524.2SIM
	BB1-A654	Y8ZZ7	N	GW	08/23/13	SOM01.2
	BB1-B654		FD	GW	08/23/13	E524.2SIM
	BB1-B654	Y8ZZ8	FD	GW	08/23/13	SOM01.2
BB2	BB2-A654		N	GW	08/23/13	E524.2SIM
	BB2-A654	Y8ZZ9	N	GW	08/23/13	SOM01.2
BB3	BB3-A654		N	GW	08/23/13	E524.2SIM
	BB3-A654	Y9000	N	GW	08/23/13	SOM01.2
CC1	CC1-A654		N	GW	08/22/13	E524.2SIM
	CC1-A654	Y9001	N	GW	08/22/13	SOM01.2
CC2	CC2-A654		N	GW	08/20/13	E524.2SIM
	CC2-A654	Y9002	N	GW	08/20/13	SOM01.2
CC3	CC3-A654		N	GW	08/21/13	E524.2SIM
	CC3-A654	Y9003	N	GW	08/21/13	SOM01.2
CC4	CC4-A654		N	GW	08/21/13	E524.2SIM
	CC4-A654	Y9004	N	GW	08/21/13	SOM01.2
CC5	CC5-A654		N	GW	08/21/13	E524.2SIM
	CC5-A654	Y9005	N	GW	08/21/13	SOM01.2
CC6	CC6-A654		N	GW	08/22/13	E524.2SIM
	CC6-A654	Y9006	N	GW	08/22/13	SOM01.2
DD1	DD1-A654		N	GW	08/21/13	E524.2SIM
	DD1-A654	Y9008	N	GW	08/21/13	SOM01.2
	DD1-B654		FD	GW	08/21/13	E524.2SIM
	DD1-B654	Y9009	FD	GW	08/21/13	SOM01.2
DD2	DD2-A654		N	GW	08/21/13	E524.2SIM
	DD2-A654	Y9010	N	GW	08/21/13	SOM01.2
DD3	DD3-A654		N	GW	08/21/13	E524.2SIM
	DD3-A654	Y9011	N	GW	08/21/13	SOM01.2
DD4	DD4-A654		N	GW	08/21/13	E524.2SIM
	DD4-A654	Y9012	N	GW	08/21/13	SOM01.2

TABLE 5-1
Groundwater Sample Collection and Analysis
Frontier Fertilizer Superfund Site, Davis, California

Location	Field ID	CLP ID	QA/QC Type	Matrix	Sample Date	Method
DD5	DD5-A654		N	GW	09/12/13	E524.2SIM
	DD5-A654	Y9013	N	GW	09/12/13	SOM01.2
DD6	DD6-A654		N	GW	09/12/13	E524.2SIM
	DD6-A654	Y9014	N	GW	09/12/13	SOM01.2
EE2	EE2-A654		N	GW	08/23/13	E524.2SIM
	EE2-A654	Y9015	N	GW	08/23/13	SOM01.2
EE3	EE3-A654		N	GW	08/23/13	E524.2SIM
	EE3-A654	Y9016	N	GW	08/23/13	SOM01.2
EE4	EE4-A654		N	GW	08/23/13	E524.2SIM
	EE4-A654	Y9017	N	GW	08/23/13	SOM01.2
EE5	EE5-A654		N	GW	08/22/13	E524.2SIM
	EE5-A654	Y9018	N	GW	08/22/13	SOM01.2
FF1	FF1-A654		N	GW	08/23/13	E524.2SIM
	FF1-A654	Y9020	N	GW	08/23/13	SOM01.2
	FF1-B654		FD	GW	08/23/13	E524.2SIM
	FF1-B654	Y9021	FD	GW	08/23/13	SOM01.2
FF2	FF2-A654		N	GW	08/22/13	E524.2SIM
	FF2-A654	Y9022	N	GW	08/22/13	SOM01.2
FF3	FF3-A654		N	GW	08/22/13	E524.2SIM
	FF3-A654	Y9023	N	GW	08/22/13	SOM01.2
GG1	GG1-A654		N	GW	09/13/13	E524.2SIM
	GG1-A654	Y9024	N	GW	09/13/13	SOM01.2
GG2	GG2-A654		N	GW	09/12/13	E524.2SIM
	GG2-A654	Y9025	N	GW	09/12/13	SOM01.2
GG4	GG4-A654		N	GW	09/13/13	E524.2SIM
	GG4-A654	Y9026	N	GW	09/13/13	SOM01.2

Notes:

FD = field duplicate
GW = groundwater
N = primary sample
QA/QC = quality assurance/quality control

TABLE 5-2
Soil Sample Collection and Analysis
Frontier Fertilizer Superfund Site, Davis, California

Location	Field ID	CLP ID	Sample Depth (feet bgs)	QA/QC Type	Matrix	Sample Date	Method
SB-06	SB06-A655-02	Y9028	2	N	Soil	09/09/13	SOM01.2
	SB06-A655-02		2	N	Soil	09/09/13	SW8260BSIM
	SB06-A655-04	Y9028	4	N	Soil	09/09/13	SOM01.2
	SB06-A655-04		4	N	Soil	09/09/13	SW8260BSIM
	SB06-A655-10	Y9030	10	N	Soil	09/09/13	SOM01.2
	SB06-A655-10		10	N	Soil	09/09/13	SW8260BSIM
	SB06-A655-20	Y9031	20	N	Soil	09/09/13	SOM01.2
	SB06-A655-30	Y9032	30	N	Soil	09/09/13	SOM01.2
	SB06-A655-40	Y9033	40	N	Soil	09/09/13	SOM01.2
	SB06-B655-40	Y9034	40	FD	Soil	09/09/13	SOM01.2
SB-07	SB07-A655-02	Y9035	2	N	Soil	08/26/13	SOM01.2
	SB07-A655-02		2	N	Soil	08/26/13	SW8260BSIM
	SB07-A655-05	Y9037	5	N	Soil	08/26/13	SOM01.2
	SB07-A655-05		5	N	Soil	08/26/13	SW8260BSIM
	SB07-A655-15	Y9038	15	N	Soil	08/27/13	SOM01.2
	SB07-A655-15		15	N	Soil	08/27/13	SW8260BSIM
	SB07-A655-20	Y9039	20	N	Soil	08/27/13	SOM01.2
	SB07-A655-30	Y9040	30	N	Soil	08/27/13	SOM01.2
	SB07-A655-40	Y9041	40	N	Soil	08/27/13	SOM01.2
SB-08	SB08-A655-02	Y9042	2	N	Soil	09/05/13	SOM01.2
	SB08-A655-02		2	N	Soil	09/05/13	SW8260BSIM
	SB08-A655-06	Y9044	6	N	Soil	09/05/13	SOM01.2
	SB08-A655-06		6	N	Soil	09/05/13	SW8260BSIM
	SB08-A655-10	Y9045	10	N	Soil	09/05/13	SOM01.2
	SB08-A655-10		10	N	Soil	09/05/13	SW8260BSIM
	SB08-A655-20	Y9046	20	N	Soil	09/05/13	SOM01.2
	SB08-A655-30	Y9047	30	N	Soil	09/05/13	SOM01.2
	SB08-A655-40	Y9048	40	N	Soil	09/05/13	SOM01.2
	SB08-A655-50	Y9049	50	N	Soil	09/05/13	SOM01.2
	SB08-A655-60	Y9050	60	N	Soil	09/06/13	SOM01.2
	SB08-A655-70	Y9051	70	N	Soil	09/06/13	SOM01.2
	SB08-A655-80	Y9052	80	N	Soil	09/06/13	SOM01.2
	SB08-B655-06	Y9043	06	FD	Soil	09/05/13	SOM01.2
	SB08-B655-06		06	FD	Soil	09/05/13	SW8260BSIM
	SB08-B655-80	Y9053	80	FD	Soil	09/06/13	SOM01.2

TABLE 5-2
Soil Sample Collection and Analysis
Frontier Fertilizer Superfund Site, Davis, California

Location	Field ID	CLP ID	Sample Depth (feet bgs)	QA/QC Type	Matrix	Sample Date	Method
SB-09	SB09-A655-02	Y9054	2	N	Soil	08/28/13	SOM01.2
	SB09-A655-02		2	N	Soil	08/28/13	SW8260BSIM
	SB09-A655-05	Y9055	5	N	Soil	08/28/13	SOM01.2
	SB09-A655-05		5	N	Soil	08/28/13	SW8260BSIM
	SB09-A655-10	Y9056	10	N	Soil	08/28/13	SOM01.2
	SB09-A655-10		10	N	Soil	08/28/13	SW8260BSIM
	SB09-A655-20	Y9057	20	N	Soil	08/28/13	SOM01.2
	SB09-A655-30	Y9058	30	N	Soil	08/28/13	SOM01.2
	SB09-A655-40	Y9059	40	N	Soil	08/29/13	SOM01.2
	SB09-A655-50	Y9060	50	N	Soil	08/29/13	SOM01.2
	SB09-A655-60	Y9061	60	N	Soil	08/29/13	SOM01.2
	SB09-A655-70	Y9062	70	N	Soil	08/29/13	SOM01.2
	SB09-A655-80	Y9064	80	N	Soil	08/29/13	SOM01.2
	SB09-B655-70	Y9063	70	FD	Soil	08/29/13	SOM01.2
SB-10	SB10-A655-02	Y9065	2	N	Soil	09/06/13	SOM01.2
	SB10-A655-02		2	N	Soil	09/06/13	SW8260BSIM
	SB10-A655-04	Y9066	4	N	Soil	09/06/13	SOM01.2
	SB10-A655-04		4	N	Soil	09/06/13	SW8260BSIM
	SB10-A655-10	Y9067	10	N	Soil	09/06/13	SOM01.2
	SB10-A655-10		10	N	Soil	09/06/13	SW8260BSIM
	SB10-A655-20	Y9068	20	N	Soil	09/06/13	SOM01.2
	SB10-A655-30	Y9069	30	N	Soil	09/06/13	SOM01.2
	SB10-A655-40	Y9070	40	N	Soil	09/06/13	SOM01.2
	SB10-A655-50	Y9071	50	N	Soil	09/06/13	SOM01.2
	SB10-A655-60	Y9072	60	N	Soil	09/09/13	SOM01.2
	SB10-A655-70	Y9074	70	N	Soil	09/09/13	SOM01.2
	SB10-A655-80	Y9075	80	N	Soil	09/09/13	SOM01.2
	SB10-B655-60	Y9073	60	FD	Soil	09/09/13	SOM01.2
SB-11	SB11-A655-10	Y9076	10	N	Soil	09/10/13	SOM01.2
	SB11-A655-10		10	N	Soil	09/10/13	SW8260BSIM
	SB11-A655-20	Y9077	20	N	Soil	09/10/13	SOM01.2
	SB11-A655-30	Y9078	30	N	Soil	09/10/13	SOM01.2
	SB11-A655-40	Y9079	40	N	Soil	09/10/13	SOM01.2
	SB11-A655-50	Y9080	50	N	Soil	09/10/13	SOM01.2

TABLE 5-2
Soil Sample Collection and Analysis
Frontier Fertilizer Superfund Site, Davis, California

Location	Field ID	CLP ID	Sample Depth (feet bgs)	QA/QC Type	Matrix	Sample Date	Method
	SB11-A655-60	Y9081	60	N	Soil	09/10/13	SOM01.2
	SB11-A655-70	Y9082	70	N	Soil	09/11/13	SOM01.2
	SB11-A655-78	Y9083	78	N	Soil	09/11/13	SOM01.2
SB-12	SB12-A655-02	Y9084	2	N	Soil	08/30/13	SOM01.2
	SB12-A655-02		2	N	Soil	08/30/13	SW8260BSIM
	SB12-A655-05	Y9086	5	N	Soil	08/30/13	SOM01.2
	SB12-A655-05		5	N	Soil	08/30/13	SW8260BSIM
	SB12-A655-10	Y9087	10	N	Soil	08/30/13	SOM01.2
	SB12-A655-10		10	N	Soil	08/30/13	SW8260BSIM
	SB12-A655-20	Y9088	20	N	Soil	08/30/13	SOM01.2
	SB12-A655-30	Y9089	30	N	Soil	09/03/13	SOM01.2
	SB12-A655-40	Y9090	40	N	Soil	09/03/13	SOM01.2
	SB12-A655-50	Y9091	50	N	Soil	09/03/13	SOM01.2
	SB12-A655-60	Y9092	60	N	Soil	09/03/13	SOM01.2
	SB12-A655-70	Y9093	70	N	Soil	09/03/13	SOM01.2
	SB12-A655-80	Y9094	80	N	Soil	09/03/13	SOM01.2
	SB12-B655-02	Y9085	02	FD	Soil	08/30/13	SOM01.2
	SB12-B655-02		02	FD	Soil	08/30/13	SW8260BSIM
SB-13	SB13-A655-20	Y9095	20	N	Soil	09/11/13	SOM01.2
	SB13-A655-30	Y9097	30	N	Soil	09/11/13	SOM01.2
	SB13-A655-40	Y9098	40	N	Soil	09/11/13	SOM01.2
	SB13-A655-50	Y9099	50	N	Soil	09/11/13	SOM01.2
	SB13-A655-60	Y90A0	60	N	Soil	09/11/13	SOM01.2
	SB13-A655-70	Y90A1	70	N	Soil	09/11/13	SOM01.2
	SB13-A655-79	Y90A2	79	N	Soil	09/11/13	SOM01.2
	SB13-B655-20	Y9096	20	FD	Soil	09/11/13	SOM01.2
SB-14	SB14-A655-20	Y90A3	20	N	Soil	08/29/13	SOM01.2
	SB14-A655-30	Y90A4	30	N	Soil	08/30/13	SOM01.2
	SB14-A655-40	Y90A5	40	N	Soil	08/30/13	SOM01.2
	SB14-A655-50	Y90A6	50	N	Soil	08/30/13	SOM01.2
	SB14-A655-60	Y90A8	60	N	Soil	08/30/13	SOM01.2
	SB14-A655-70	Y90A9	70	N	Soil	08/30/13	SOM01.2
	SB14-A655-80	Y90B0	80	N	Soil	08/30/13	SOM01.2
	SB14-B655-50	Y90A7	50	FD	Soil	08/30/13	SOM01.2

TABLE 5-2
Soil Sample Collection and Analysis
Frontier Fertilizer Superfund Site, Davis, California

Location	Field ID	CLP ID	Sample Depth (feet bgs)	QA/QC Type	Matrix	Sample Date	Method
SB-15	SB15-A655-11	Y90E1	11	N	Soil	09/09/13	SOM01.2
	SB15-A655-20	Y90B1	20	N	Soil	09/09/13	SOM01.2
	SB15-A655-30	Y90B2	30	N	Soil	09/09/13	SOM01.2
	SB15-A655-40	Y90B3	40	N	Soil	09/10/13	SOM01.2
	SB15-A655-50	Y90B4	50	N	Soil	09/10/13	SOM01.2
	SB15-A655-60	Y90B5	60	N	Soil	09/10/13	SOM01.2
	SB15-A655-70	Y90B6	70	N	Soil	09/10/13	SOM01.2
	SB15-A655-78	Y90B7	78	N	Soil	09/10/13	SOM01.2
	SB15-B655-78	Y90B8	78	FD	Soil	09/10/13	SOM01.2
SB-16	SB16-A655-20	Y90B9	20	N	Soil	09/03/13	SOM01.2
	SB16-A655-30	Y90C0	30	N	Soil	09/04/13	SOM01.2
	SB16-A655-40	Y90C1	40	N	Soil	09/04/13	SOM01.2
	SB16-A655-50	Y90C2	50	N	Soil	09/04/13	SOM01.2
	SB16-A655-60	Y90C3	60	N	Soil	09/04/13	SOM01.2
	SB16-A655-70	Y90C4	70	N	Soil	09/04/13	SOM01.2
	SB16-A655-80	Y90C5	80	N	Soil	09/04/13	SOM01.2
SB-17	SB17-A655-14	Y90E3	14	N	Soil	09/12/13	SOM01.2
	SB17-A655-20	Y90C6	20	N	Soil	09/12/13	SOM01.2
	SB17-A655-30	Y90C7	30	N	Soil	09/12/13	SOM01.2
	SB17-A655-40	Y90C8	40	N	Soil	09/12/13	SOM01.2
	SB17-A655-50	Y90D0	50	N	Soil	09/12/13	SOM01.2
	SB17-A655-59	Y90D1	59	N	Soil	09/12/13	SOM01.2
	SB17-B655-40	Y90C9	40	FD	Soil	09/12/13	SOM01.2
SB-18	SB18-A655-18	Y90E0	18	N	Soil	09/04/13	SOM01.2
	SB18-A655-30	Y90D2	30	N	Soil	09/04/13	SOM01.2
	SB18-A655-40	Y90D3	40	N	Soil	09/05/13	SOM01.2
	SB18-A655-50	Y90D4	50	N	Soil	09/05/13	SOM01.2
	SB18-A655-60	Y90D5	60	N	Soil	09/05/13	SOM01.2
	SB18-A655-70	Y90D6	70	N	Soil	09/05/13	SOM01.2
	SB18-A655-80	Y90D8	80	N	Soil	09/05/13	SOM01.2
	SB18-B655-70	Y90D7	70	FD	Soil	09/05/13	SOM01.2

Notes:

FD = field duplicate
N = primary sample

SECTION 6

Post-ISTT Results

This section presents analytical results of soil and groundwater samples collected during the field investigation.

6.1 Groundwater

Detections from the sample event are shown in Table 6-1 (Section 6 tables are presented at the end of this section) and include the COCs along with tentatively identified compounds (TICs) in the VOC spectrum. Figure 6-1 presents groundwater results for the post-ISTT samples along with results recent results from downgradient wells that were not part of the post-ISTT sampling scope.

COCs above RAOs were not detected in groundwater samples collected from within the ISTT volume. Detections of COCs from the upgradient, downgradient, crossgradient, perimeter, and below the ISTT volume do not show significant differences from pre-heating results; comparison is provided in Section 8.

Groundwater field sheets are located in Appendix C. Full laboratory data packages are provided in Appendix D.

Although it was unknown prior to ISTT implementation whether this technology could successfully treat the COCs in groundwater to the cleanup goals specified in the ROD, the analytical results for post-treatment groundwater samples indicate that the ISTT process was successful in achieving these goals throughout the ISTT treated volume.

6.2 Soil

After ISTT, no COCs were detected above the RAOs. The only detection of COCs were in borings SB-06, SB-08, and SB-12, and only at depths of 10 feet and shallower. SB-06 detections were of TCP and EDB at an order-of-magnitude below the RAOs at 2 and 4 feet bgs. While this location did reach maximum temperatures of 98.5°C, the shallow soils were cooled by SVE operations after treatment which may have limited degradation by residual heat post-heating. (For example, TMW-4 at 2 feet bgs cooled approximately 20°C in less than 2 months, whereas the saturated depth at 30 feet bgs took 10 months to cool the same amount.) Due to field relocations, SB-08 was collected at the intersection of all three stages and the boundary might have been an area that did not reach temperatures as high as the internal TMWs. Similarly, SB-12 was also at the edge of Zone 7 and may not have reached high temperatures. Acetone and 2-butanone (methyl ethyl ketone [MEK]) was commonly found in the soil samples. Detections of acetone and MEK are fairly common after ISTT heating; while the mechanism is not fully understood, it is believed that the compounds are created from the thermal breakdown of organic carbon in the soil.

Complete soil analytical results are summarized in Table 6-2. Figure 6-2 presents soil results for the post-ISTT samples. Field sheets are located in Appendix C. Full laboratory data packages are provided in Appendix D.

As with the groundwater, it was unknown prior to ISTT implementation whether this technology could successfully treat the COCs in soil to the cleanup goals specified in the ROD for the uppermost 10 feet of soil. The analytical results for post-treatment soil samples indicate that the ISTT process was successful in achieving these goals in soil throughout the ISTT treated volume.

6.3 Data Quality Assessment

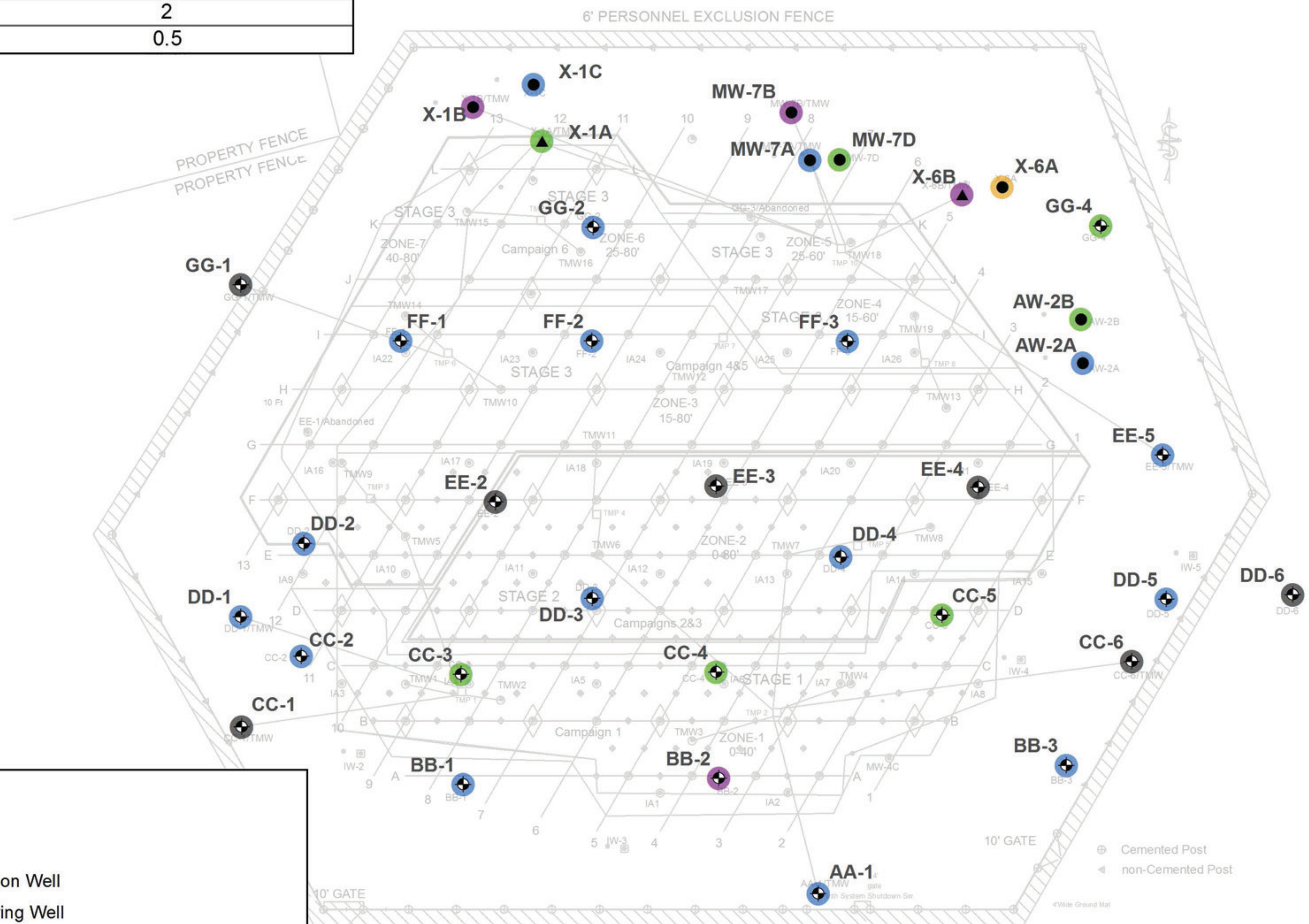
The data quality was evaluated to assess whether the data meet the needs of the data quality objectives (DQOs). The goal of the assessment is to demonstrate that the sufficient and representative data were collected. In summary, the data were found to be of acceptable quality to meet the needs of the DQOs. Full data quality assessment is contained in Appendix E.

6.4 Investigation-Derived Waste (IDW) Disposal

Approximately 15 cubic yards of soil cuttings were generated and accumulated in one 20-cubic yard rolloff bin, as described in the *Addendum No. 1 to Sampling and Analysis Plan for the In-Situ Thermal Treatment at Frontier Fertilizer NPL Site (March 2011)* (CH2M HILL, 2013). Two IDW samples (IDW-2 and IDW-3) were collected from the soil cuttings. Results are provided in Appendix D. For all analytes, results are below RCRA toxicity characteristic levels by TCLP test and are below the soluble threshold limit concentration (STLC). The soil cuttings were non-hazardous and transported for disposal to Recology's Hay Road Landfill under profile/job # 5939. Total weight was 8.99 tons. Prior to transport, facility compliance with the CERCLA Off-Site Rule was confirmed with the EPA Region 9 Regional Off-Site Contact.

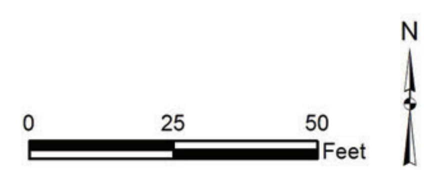
In addition, one extra sample, IDW-1, was use for classification of approximately 1 cubic yard of soil cores generated during past well installation at the site. These cores had been stored in the pump and treat building by the EPA for possible reference, but EPA deemed them no longer necessary for reference. Like the other IDW samples, these results did not exceed the regulatory levels. These cores were added to the soil cuttings prior to disposal.

COC	Removal Action Objective (µg/L)
DCP	5
EDB	0.05
DBCP	2
TCP	0.5



LEGEND

- Well
- Extraction Well
- Monitoring Well
- ND FOR ALL COCS
- ONE OR MORE OF THE COCS DETECTED LESS THEN REMOVAL ACTION OBJECTIVE
- ONE OR MORE OF THE COCS DETECTED 1-10X REMOVAL ACTION OBJECTIVE
- ONE OR MORE OF THE COCS DETECTED 10-100X REMOVAL ACTION OBJECTIVE
- ONE OR MORE OF THE COCS DETECTED >100X REMOVAL ACTION OBJECTIVE



Well ID	Screen Depth (ft bgs)	Location	Post Heating Results (3Q2013) DCP	EDB	DBCP	TCP
DD-3	55 - 65	Inside ISTT	0.35 J	ND	ND	0.014
DD-4	74 - 84	Inside ISTT	ND	ND	ND	0.01
EE-2	60 - 70	Inside ISTT	ND	ND	ND	ND
EE-3	46 - 56	Inside ISTT	ND	ND	ND	ND
EE-4	73 - 83	Inside ISTT	ND	ND	ND	ND
FF-1	44 - 54	Inside ISTT	1.2	0.004 J	ND	0.4
FF-2	74 - 84	Inside ISTT	ND	ND	ND	0.055
FF-3	47 - 57	Inside ISTT	ND	ND	ND	0.009
GG-2	76 - 86	Inside ISTT	ND	ND	ND	0.01 J
GG-3	73 - 83	Inside ISTT	Well Abandoned for ISTT Installation			
AA-1	37 - 47	Perimeter, upgradient	0.73	ND	ND	ND
BB-1	74 - 84	Perimeter, upgradient	0.45 J	ND	ND	0.006
BB-2	72 - 82	Perimeter, upgradient	86	ND	ND	0.15
BB-3	74 - 84	Perimeter, upgradient	0.82	ND	ND	0.009
CC-1	76 - 86	Perimeter	ND	ND	ND	ND
CC-2	40 - 50	Perimeter	3	ND	ND	0.003 J
CC-3	55 - 65	Perimeter, below	32	0.45	ND	1.6
CC-4	76 - 86	Perimeter, below	16	ND	ND	0.03
CC-5	52 - 62	Perimeter	0.21 J	0.061	0.007 J	0.003 J
CC-6	44 - 54	Perimeter	ND	ND	ND	ND
DD-1	71 - 81	Perimeter	3.7	ND	ND	ND
DD-2	36 - 46	Perimeter, edge	3.7	0.044	ND	0.16
DD-5	74 - 84	Perimeter	0.23 J	ND	ND	ND
DD-6	40 - 50	Perimeter	ND	ND	ND	ND
EE-1	83 - 93	Perimeter, edge	Well Abandoned for ISTT Installation			
EE-5	75 - 85	Perimeter	1.1	ND	ND	0.01
GG-1	78 - 88	Perimeter	ND	ND	ND	ND
GG-4	80 - 90	Perimeter	9.8	0.16	0.15	0.63 J
AW-2A	13 - 43	Perimeter	2.1	ND*	ND*	ND-R
AW-2B	73 - 93	Perimeter	7.6	ND*	ND*	0.42 J
MW-4C	114 - 124	Perimeter, below	Not Sampled			
MW-7A	12.5 - 30	Perimeter, downgradient	3.1	ND*	ND*	ND-R
MW-7B	36 - 46	Perimeter, downgradient	20	0.77	ND*	2.4 J
MW-7D	114 - 124	Perimeter, downgradient	5.2	ND*	ND*	ND-R
X-1A	31 - 51	Perimeter, downgradient	1	0.15 J	ND*	0.42 J
X-1B	65 - 85	Perimeter, downgradient	90	0.28 J	ND*	6.9 J
X-1C	111 - 131	Perimeter, downgradient	3.3	ND*	ND*	ND-R
X-6A	20 - 60	Perimeter, downgradient	230	8.6	2.8	33 J
X-6B	67 - 97	Perimeter, downgradient	86 J	3.8	ND*	4 J

Notes:

All results in µg/L.

Pre-heating results for TCP are by Method 524.2 with typical reporting limit of 0.5 µg/L.

Post-heating results by Method 524.2SIM with typica reporting limit of 0.005 µg/L.

ND* = only 524.2 result, no 524.2SIM result available.

ND-R = Non-detect, data qualified a rejected from laboratory.

FIGURE 6-1

Post-Heating Groundwater Sample Results, August - September 2013

Frontier Fertilizer - Davis, CA

Path: D:\FrontierFertilizer\Quarterly_GW_Reports\Deliverable\Mapfiles\Thiessen\Theissien5.mxd

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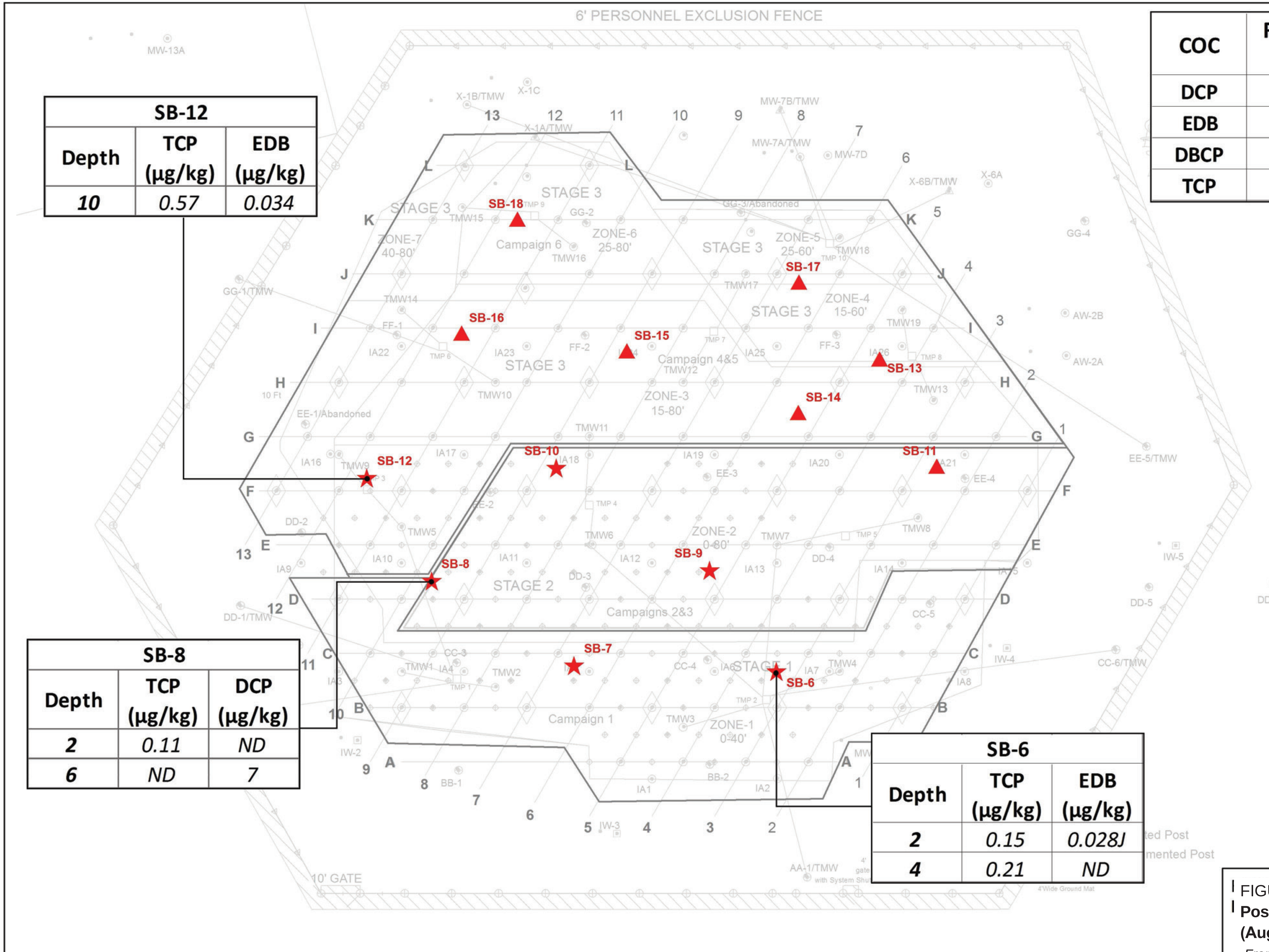

COC	Removal Action Objective (µg/kg)
DCP	*20*
EDB	*0.18*
DBCP	*1.2*
TCP	*2.5*

SB-12

Depth	TCP (µg/kg)	EDB (µg/kg)
10	*0.57*	*0.034*

SB-8

Depth	TCP (µg/kg)	DCP (µg/kg)
2	*0.11*	*ND*
6	*ND*	*7*

SB-6

Depth	TCP (µg/kg)	EDB (µg/kg)
2	*0.15*	*0.028J*
4	*0.21*	*ND*

Soil Samples

★ Soil boring sampled at approximately 2, 5, and every 10 feet below ground surface to treatment volume depth

▲ Soil boring sampled approximately every10 feet below ground surface to treatment volume depth

Note: Soil samples collected at borings without callout boxes were all non-detect.

J=The reported result for this analyte should be considered an estimated value

µg/kg = microgram per kilogram

N

0 10 20 Feet

FIGURE 6-2

Post-Heating Soil Sample Results (August-September 2013)

Frontier Fertilizer - Davis, CA

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TABLE 6-1
Chemicals Detected in Groundwater Samples (August – September 2013)
Frontier Fertilizer Superfund Site, Davis, California

Location	Screen Depth (feet bgs)	QA/QC Type	Method	Analyte	Groundwater RAO	Result	Units	Flag
AA-1	37 to 47	N	TVOL	DCP	5	0.73	µg/L	
		N	TVOL	2-Butanone (MEK)		1.1	µg/L	J
		N	TVOL	Carbon disulfide		0.55	µg/L	
		N	TVOL	Chloroform		0.32	µg/L	J
BB-1	74 to 84	FD	5242SIM	1,2,3-TCP	0.5	0.006	µg/L	
		N	TVOL	1,2-DCP	5	0.45	µg/L	J
		FD	TVOL	1,2-DCP	5	0.47	µg/L	J
		FD	TVOL	2-Butanone (MEK)		1.5	µg/L	J
		N	TVOL	Benzene		0.22	µg/L	J
		FD	TVOL	Benzene		0.2	µg/L	J
		N	TVOL	Carbon disulfide		1.3	µg/L	J
		FD	TVOL	Carbon disulfide		1.4	µg/L	J
		N	TVOL	Toluene		0.12	µg/L	J
		FD	TVOL	Toluene		0.12	µg/L	J
BB-2	72 to 82	N	5242SIM	1,2,3-TCP	0.5	0.15	µg/L	
		N	TVOL	1,2-DCP	5	**86**	µg/L	
		N	TVOL	Benzene		0.083	µg/L	J
		N	TVOL	Methyl tert-butyl ether		0.62	µg/L	
		N	TVOL	Toluene		0.067	µg/L	J
BB-3	74 to 84	N	5242SIM	1,2,3-TCP	0.5	0.009	µg/L	
		N	TVOL	1,2-DCP	5	0.82	µg/L	
		N	TVOL	Chloroform		0.14	µg/L	J
CC-1	76 to 86	N	TVOL	Chloroform		0.22	µg/L	J
		N	TVOL	Toluene		0.14	µg/L	J
CC-2	40 to 50	N	5242SIM	1,2,3-TCP	0.5	0.003	µg/L	J
		N	TVOL	1,2-DCP	5	3	µg/L	
		N	TVOL	Toluene		0.064	µg/L	J
CC-3	55 to 65	N	TVOL	1,2,3-TCP	0.5	**1.6**	µg/L	J
		N	5242SIM	EDB	0.05	**0.45**	µg/L	
		N	TVOL	1,2-DCP	5	**32**	µg/L	
		N	TVOL	2-Butanone (MEK)		0.77	µg/L	J
		N	TVOL	Chlorobenzene		0.074	µg/L	J
		N	TVOL	Methylcyclohexane		0.15	µg/L	J
		N	TVOL	Toluene		0.065	µg/L	J
		N	TVOL	Vinyl bromide		0.084	µg/L	J

TABLE 6-1
Chemicals Detected in Groundwater Samples (August – September 2013)
Frontier Fertilizer Superfund Site, Davis, California

Location	Screen Depth (feet bgs)	QA/QC Type	Method	Analyte	Groundwater RAO	Result	Units	Flag
CC-4	76 to 86	N	5242SIM	1,2,3-TCP	0.5	0.03	µg/L	
		N	TVOL	1,2-DCP	5	**16**	µg/L	
		N	TVOL	Benzene		1.9	µg/L	
		N	TVOL	Carbon disulfide		0.88	µg/L	
		N	TVOL	Methyl tert-butyl ether		0.35	µg/L	J
		N	TVOL	Toluene		0.45	µg/L	J
CC-5	52 to 62	N	5242SIM	1,2,3-TCP	0.5	0.003	µg/L	J
		N	5242SIM	DBCP	0.2	0.007	µg/L	J
		N	5242SIM	EDB	0.05	**0.061**	µg/L	
		N	TVOL	1,2-DCP	5	0.21	µg/L	J
		N	TVOL	2-Hexanone (methyl n-butyl ketone)		3.1	µg/L	J
		N	TVOL	CCl_4	0.5	**1**	µg/L	
		N	TVOL	cis-1,3-Dichloropropene		0.23	µg/L	J
		N	TVOL	Toluene		0.12	µg/L	J
		N	TVOL	trans-1,3-Dichloropropene		0.16	µg/L	J
DD-1	71 to 81	N	TVOL	1,2-DCP	5	3.7	µg/L	
		FD	TVOL	1,2-DCP	5	3.7	µg/L	
		N	TVOL	Chloroform		0.17	µg/L	J
		FD	TVOL	Chloroform		0.18	µg/L	J
DD-2	36 to 46	N	5242SIM	1,2,3-TCP	0.5	0.16	µg/L	
		N	5242SIM	EDB	0.05	0.044	µg/L	
		N	TVOL	1,2-DCP	5	3.7	µg/L	
		N	TVOL	Chlorobenzene		0.066	µg/L	J
		N	TVOL	Chloroform		0.37	µg/L	J
DD-3	55 to 65	N	TVOL	1,1-Dichloropropene		0.088	µg/L	J
		N	5242SIM	1,2,3-TCP	0.5	0.014	µg/L	
		N	TVOL	1,2-DCP	5	0.35	µg/L	J
		N	TVOL	Benzene		3.2	µg/L	
		N	TVOL	Chlorobenzene		0.29	µg/L	J
		N	TVOL	Toluene		0.095	µg/L	J
		N	TVOL	Vinyl bromide		0.051	µg/L	J
DD-4	74 to 84	N	5242SIM	1,2,3-TCP	0.5	0.01	µg/L	
		N	TVOL	2-Hexanone (methyl n-butyl ketone)		4.4	µg/L	J
		N	TVOL	Benzene		1.5	µg/L	
		N	TVOL	Chlorobenzene		0.089	µg/L	J
		N	TVOL	m,p-Xylene		0.17	µg/L	J
		N	TVOL	Toluene		0.41	µg/L	J
		N	TVOL	Vinyl bromide		0.069	µg/L	J

TABLE 6-1
Chemicals Detected in Groundwater Samples (August – September 2013)
Frontier Fertilizer Superfund Site, Davis, California

Location	Screen Depth (feet bgs)	QA/QC Type	Method	Analyte	Groundwater RAO	Result	Units	Flag
DD-5	74 to 84	N	TVOL	1,2-DCP	5	0.23	µg/L	J
		N	TVOL	2-Butanone (MEK)		2.1	µg/L	J
		N	TVOL	Bromomethane		0.19	µg/L	J
		N	TVOL	Chlorobenzene		0.11	µg/L	J
		N	TVOL	Chloroform		0.81	µg/L	
		N	TVOL	Chloromethane		1.3	µg/L	J
		N	TVOL	Vinyl chloride		0.1	µg/L	J
EE-2	60 to 70	N	TVOL	2,3-Dichloropropene		0.58	µg/L	J
		N	TVOL	2-Butanone (MEK)		70	µg/L	
		N	TVOL	2-Hexanone (methyl n-butyl ketone)		2	µg/L	J
		N	TVOL	Acetone		590	µg/L	
		N	TVOL	Benzene		52	µg/L	
		N	TVOL	Bromomethane		0.14	µg/L	J
		N	TVOL	Carbon disulfide		0.65	µg/L	
		N	TVOL	Chlorobenzene		1.2	µg/L	J
		N	TVOL	Chloromethane		1	µg/L	
		N	TVOL	m,p-Xylene		0.16	µg/L	J
		N	TVOL	o-Xylene		0.13	µg/L	J
		N	TVOL	Toluene		1	µg/L	
		N	TVOL	Vinyl bromide		3.7	µg/L	J
		N	TVOL	Vinyl chloride		0.25	µg/L	J
EE-3	46 to 56	N	TVOL	2-Butanone (MEK)		6.4	µg/L	
		N	TVOL	4-Methyl-2-pentanone (pentanone)		1.2	µg/L	J
		N	TVOL	Acetone		45	µg/L	
		N	TVOL	Benzene		1.6	µg/L	J
		N	TVOL	Chloromethane		1.1	µg/L	
		N	TVOL	m,p-Xylene		0.12	µg/L	J
		N	TVOL	Methyl acetate		1.7	µg/L	
		N	TVOL	Toluene		0.22	µg/L	J
EE-4	73 to 83	N	TVOL	2-Butanone (MEK)		10	µg/L	
		N	TVOL	4-Methyl-2-pentanone (pentanone)		12	µg/L	
		N	TVOL	Acetone		36	µg/L	
		N	TVOL	Benzene		11	µg/L	J
		N	TVOL	Carbon disulfide		0.59	µg/L	J
		N	TVOL	Chlorobenzene		2.6	µg/L	
		N	TVOL	m,p-Xylene		0.32	µg/L	J
		N	TVOL	o-Xylene		1.8	µg/L	
		N	TVOL	Toluene		0.7	µg/L	

TABLE 6-1
Chemicals Detected in Groundwater Samples (August – September 2013)
Frontier Fertilizer Superfund Site, Davis, California

Location	Screen Depth (feet bgs)	QA/QC Type	Method	Analyte	Groundwater RAO	Result	Units	Flag
EE-5	75 to 85	N	5242SIM	1,2,3-TCP	0.5	0.01	µg/L	
		N	TVOL	1,2-DCP	5	1.1	µg/L	
		N	TVOL	Benzene		0.13	µg/L	J
FF-1	44 to 54	N	5242SIM	1,2,3-TCP	0.5	0.4	µg/L	
		FD	5242SIM	1,2,3-TCP	0.5	0.39	µg/L	
		N	5242SIM	EDB	0.05	0.004	µg/L	J
		FD	5242SIM	EDB	0.05	0.004	µg/L	J
		N	TVOL	1,2-DCP	5	1.2	µg/L	
		FD	TVOL	1,2-DCP	5	1.3	µg/L	
		N	TVOL	Benzene		0.49	µg/L	J
		FD	TVOL	Benzene		0.47	µg/L	J
		N	TVOL	Chlorobenzene		0.16	µg/L	J
		FD	TVOL	Chlorobenzene		0.18	µg/L	J
		N	TVOL	m,p-Xylene		0.079	µg/L	J
		FD	TVOL	m,p-Xylene		0.075	µg/L	J
		N	TVOL	Toluene		0.14	µg/L	J
		FD	TVOL	Toluene		0.12	µg/L	J
		N	TVOL	Vinyl bromide		0.055	µg/L	J
		FD	TVOL	Vinyl bromide		0.052	µg/L	J
FF-2	74 to 84	N	5242SIM	1,2,3-TCP	0.5	0.055	µg/L	
		N	TVOL	2-Butanone (MEK)		110	µg/L	
		N	TVOL	Acetone		1700	µg/L	
		N	TVOL	Benzene		93	µg/L	J
		N	TVOL	Carbon disulfide		0.66	µg/L	J
		N	TVOL	Chlorobenzene		0.92	µg/L	
		N	TVOL	m,p-Xylene		0.2	µg/L	J
		N	TVOL	Toluene		1.4	µg/L	J
		N	TVOL	Vinyl bromide		0.65	µg/L	
FF-3	47 to 57	N	5242SIM	1,2,3-TCP	0.5	0.009	µg/L	
		N	TVOL	2-Butanone (MEK)		79	µg/L	
		N	TVOL	2-Hexanone (methyl n-butyl ketone)		4.3	µg/L	J
		N	TVOL	4-Methyl-2-pentanone (pentanone)		3.6	µg/L	J
		N	TVOL	Acetone		560	µg/L	J
		N	TVOL	Benzene		24	µg/L	J
		N	TVOL	m,p-Xylene		0.13	µg/L	J
		N	TVOL	Toluene		0.36	µg/L	J

TABLE 6-1
Chemicals Detected in Groundwater Samples (August – September 2013)
Frontier Fertilizer Superfund Site, Davis, California

Location	Screen Depth (feet bgs)	QA/QC Type	Method	Analyte	Groundwater RAO	Result	Units	Flag
GG-1	78 to 88	N	TVOL	Benzene		0.092	µg/L	J
		N	TVOL	Chloroform		0.23	µg/L	J
		N	TVOL	M,P-Xylene		0.086	µg/L	J
		N	TVOL	Methyl tert-butyl ether		0.51	µg/L	
		N	TVOL	Toluene		0.16	µg/L	J
GG-2	76 to 86	N	5242SIM	1,2,3-TCP	0.5	0.01	µg/L	J
		N	TVOL	1,2-Dichlorobenzene		0.26	µg/L	J
		N	TVOL	1,3-Dichlorobenzene		0.31	µg/L	J
		N	TVOL	1,4-Dichlorobenzene		0.26	µg/L	J
		N	TVOL	2-Butanone (MEK)		95	µg/L	
		N	TVOL	2-Hexanone (methyl n-butyl ketone)		2.4	µg/L	J
		N	TVOL	4-Methyl-2-pentanone (pentanone)		2.2	µg/L	J
		N	TVOL	Acetone		1600	µg/L	
		N	TVOL	Benzene		36	µg/L	J
		N	TVOL	Chlorobenzene		16	µg/L	
		N	TVOL	Chloroform		24	µg/L	J
		N	TVOL	cis-1,2-Dichloroethene		0.55	µg/L	
		N	TVOL	Toluene		0.44	µg/L	J
		N	TVOL	Trichloroethene		3.2	µg/L	
		N	TVOL	Vinyl bromide		0.067	µg/L	J
		N	TVOL	Vinyl chloride		0.098	µg/L	J
GG-4	80 to 90	N	TVOL	1,2,3-TCP	0.5	0.63	µg/L	J
		N	5242SIM	DBCP	0.2	0.15	µg/L	
		N	5242SIM	EDB	0.05	0.16	µg/L	
		N	TVOL	1,2-DCP	5	9.8	µg/L	
		N	TVOL	1,3-DCP		0.06	µg/L	J
		N	TVOL	Methyl tert-butyl ether		0.15	µg/L	J

Notes:

Bold text indicates that results exceed RAOs

-- = no RAO established
5242SIM = Low level TCP (E524.2SIM)
E = Concentration exceeds upper level of instrument calibration range.
FD = field duplicate
J = The reported result for this analyte should be considered an estimated value.
N = primary sample
RAO = remedial action objective
TVOL = trace volatiles (SOM01.2 TVOL)

TABLE 6-2
Chemicals Detected in Post-Heating Soil Borings
Frontier Fertilizer Superfund Site, Davis, California

Location	Depth (feet bgs)	QA/QC Type	Method	Analyte	Soil RAO	Result	Units	Flag
SB-06	2	N	8260C	1,2,3-TCP	2.5	0.15	µg/kg	
		N	8260C	EDB	0.18	0.028	µg/kg	J
	4	N	8260C	1,2,3-TCP	2.5	0.21	µg/kg	
		N	SOM01.2_CVOL	2-Butanone (MEK)	--	220	µg/kg	
		N	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	2.7	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	3200	µg/kg	
	10	N	SOM01.2_CVOL	2-Butanone (MEK)	--	110	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	1600	µg/kg	
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	13	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	76	µg/kg	
	40	FD	SOM01.2_CVOL	Chloroform	--	0.59	µg/kg	J
		N	SOM01.2_CVOL	Chloroform	--	0.6	µg/kg	J
		FD	SOM01.2_CVOL	Dichloromethane	--	0.79	µg/kg	J
		N	SOM01.2_CVOL	Dichloromethane	--	0.72	µg/kg	J
SB-07	2	N	SOM01.2_CVOL	2-Butanone (MEK)	--	15	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	86	µg/kg	
	5	N	SOM01.2_CVOL	2-Butanone (MEK)	--	170	µg/kg	
		N	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	2.9	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	3100	µg/kg	
	15	N	SOM01.2_CVOL	2-Butanone (MEK)	--	330	µg/kg	
		N	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	5.1	µg/kg	J
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	5.4	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	3600	µg/kg	
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	4.6	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	27	µg/kg	
SB-08	2	N	8260C	1,2,3-TCP	2.5	0.11	µg/kg	
		N	SOM01.2_CVOL	2-Butanone (MEK)	--	13	µg/kg	
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	3.5	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	53	µg/kg	
	6	N	SOM01.2_CVOL	1,2-DCP	20	7	µg/kg	
		FD	SOM01.2_CVOL	2-Butanone (MEK)	--	46		
		N	SOM01.2_CVOL	2-Butanone (MEK)	--	41	µg/kg	
		FD	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	2.5	µg/kg	J
		N	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	2.4	µg/kg	J
		FD	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	3	µg/kg	J
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	3.3	µg/kg	J
		FD	SOM01.2_CVOL	Acetone	--	220	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	200	µg/kg	

TABLE 6-2
Chemicals Detected in Post-Heating Soil Borings
Frontier Fertilizer Superfund Site, Davis, California

Location	Depth (feet bgs)	QA/QC Type	Method	Analyte	Soil RAO	Result	Units	Flag
	10	N	SOM01.2_CVOL	2-Butanone (MEK)	--	82	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	270	µg/kg	
	60	N	SOM01.2_CVOL	2-Butanone (MEK)	--	2.7	µg/kg	J
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	18	µg/kg	
		FD	SOM01.2_CVOL	2-Butanone (MEK)	--	15	µg/kg	
		FD	SOM01.2_CVOL	Acetone	--	120	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	180	µg/kg	
		N	SOM01.2_CVOL	Benzene	--	0.96	µg/kg	J
		FD	SOM01.2_CVOL	Toluene	--	0.59	µg/kg	J
SB-09	2	N	SOM01.2_CVOL	2-Butanone (MEK)	--	1100	µg/kg	
		N	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	5.5	µg/kg	J
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	14	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	4300	µg/kg	
	5	N	SOM01.2_CVOL	2-Butanone (MEK)	--	210	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	1500	µg/kg	
	10	N	SOM01.2_CVOL	2-Butanone (MEK)	--	48	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	210	µg/kg	
	20	N	SOM01.2_CVOL	Acetone	--	45	µg/kg	
	30	N	SOM01.2_CVOL	2-Butanone (MEK)	--	4.9	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	27	µg/kg	
	70	FD	SOM01.2_CVOL	2-Butanone (MEK)	--	5	µg/kg	J
		FD	SOM01.2_CVOL	Acetone	--	40	µg/kg	
SB-10	2	N	SOM01.2_CVOL	2-Butanone (MEK)	--	3.4	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	60	µg/kg	
	4	N	SOM01.2_CVOL	2-Butanone (MEK)	--	69	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	990	µg/kg	
		N	SOM01.2_CVOL	2-Hexanone (methyl n-butyl ketone)	--	1.9	µg/kg	J
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	2.4	µg/kg	J
	10	N	SOM01.2_CVOL	2-Butanone (MEK)	--	92	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	1700	µg/kg	
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	44	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	310	µg/kg	
	30	N	SOM01.2_CVOL	2-Butanone (MEK)	--	13	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	150	µg/kg	

TABLE 6-2
Chemicals Detected in Post-Heating Soil Borings
Frontier Fertilizer Superfund Site, Davis, California

Location	Depth (feet bgs)	QA/QC Type	Method	Analyte	Soil RAO	Result	Units	Flag
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	7.5	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	60	µg/kg	
		N	SOM01.2_CVOL	Toluene	--	0.6	µg/kg	J
	60	N	SOM01.2_CVOL	Chloroform	--	0.55	µg/kg	J
		N	SOM01.2_CVOL	Dichloromethane	--	0.61	µg/kg	J
		N	SOM01.2_CVOL	Dichloromethane	--	0.71	µg/kg	J
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	53	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	1100	µg/kg	
		N	SOM01.2_CVOL	Benzene	--	8	µg/kg	
		N	SOM01.2_CVOL	Chlorobenzene	--	2.3	µg/kg	J
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	33	µg/kg	
		FD	SOM01.2_CVOL	Acetone	--	250	µg/kg	
SB-11	10	N	SOM01.2_CVOL	2-Butanone (MEK)	--	68	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	300	µg/kg	
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	250	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	1200	µg/kg	
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	11	µg/kg	
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	5	µg/kg	J
	50	N	SOM01.2_CVOL	2-Butanone (MEK)	--	12	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	46	µg/kg	
	60	N	SOM01.2_CVOL	Chloroform	--	0.56	µg/kg	J
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	4.3	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	34	µg/kg	
SB-12	2	FD	SOM01.2_CVOL	Trichloroethene	--	0.71	µg/kg	J
	5	N	SOM01.2_CVOL	2-Butanone (MEK)	--	3	µg/kg	J
	10	N	8260C	1,2,3-TCP	2.5	0.57	µg/kg	
		N	8260C	EDB	0.18	0.034	µg/kg	
		N	SOM01.2_CVOL	2-Butanone (MEK)	--	290	µg/kg	
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	8.5	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	3000	µg/kg	
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	80	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	190	µg/kg	
	30	N	SOM01.2_CVOL	Dichloromethane	--	0.86	µg/kg	J
	50	N	SOM01.2_CVOL	Dichloromethane	--	0.67	µg/kg	J

TABLE 6-2
Chemicals Detected in Post-Heating Soil Borings
Frontier Fertilizer Superfund Site, Davis, California

Location	Depth (feet bgs)	QA/QC Type	Method	Analyte	Soil RAO	Result	Units	Flag
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	51	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	1300	µg/kg	
		N	SOM01.2_CVOL	Benzene	--	2.2	µg/kg	J
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	33	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	340	µg/kg	
		N	SOM01.2_CVOL	cis-1,3-Dichloropropene	--	2.4	µg/kg	J
SB-13	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	56	µg/kg	
		FD	SOM01.2_CVOL	2-Butanone (MEK)	--	49	µg/kg	
		FD	SOM01.2_CVOL	Acetone	--	250	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	290	µg/kg	
	30	N	SOM01.2_CVOL	2-Butanone (MEK)	--	15	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	150	µg/kg	
		N	SOM01.2_CVOL	cis-1,3-Dichloropropene	--	2.8	µg/kg	J
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	13	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	110	µg/kg	
	50	N	SOM01.2_CVOL	2-Butanone (MEK)	--	5.6	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	37	µg/kg	
	60	N	SOM01.2_CVOL	2-Butanone (MEK)	--	5.3	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	34	µg/kg	
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	12	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	130	µg/kg	
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	5.5	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	36	µg/kg	
SB-14	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	60	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	260	µg/kg	
	30	N	SOM01.2_CVOL	2-Butanone (MEK)	--	17	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	110	µg/kg	
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	14	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	130	µg/kg	
	50	FD	SOM01.2_CVOL	Toluene	--	0.62	µg/kg	J
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	4.9	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	41	µg/kg	
		N	SOM01.2_CVOL	Benzene	--	1	µg/kg	J
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	6.5	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	47	µg/kg	

TABLE 6-2
Chemicals Detected in Post-Heating Soil Borings
Frontier Fertilizer Superfund Site, Davis, California

Location	Depth (feet bgs)	QA/QC Type	Method	Analyte	Soil RAO	Result	Units	Flag
SB-15	11	N	SOM01.2_CVOL	2-Butanone (MEK)	--	140	µg/kg	
		N	SOM01.2_CVOL	Chloroform	--	0.56	µg/kg	J
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	43	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	280	µg/kg	
	30	N	SOM01.2_CVOL	Acetone	--	170	µg/kg	
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	23	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	180	µg/kg	
	50	N	SOM01.2_CVOL	2-Butanone (MEK)	--	20	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	150	µg/kg	
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	43	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	940	µg/kg	
	78	N	SOM01.2_CVOL	2-Butanone (MEK)	--	10	µg/kg	J
		FD	SOM01.2_CVOL	2-Butanone (MEK)	--	11	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	110	µg/kg	
		FD	SOM01.2_CVOL	Acetone	--	110	µg/kg	
SB-16	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	68	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	230	µg/kg	
		N	SOM01.2_CVOL	cis-1,3-Dichloropropene	--	2	µg/kg	J
		N	SOM01.2_CVOL	Dichloromethane	--	0.5	µg/kg	J
	30	N	SOM01.2_CVOL	2-Butanone (MEK)	--	11	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	110	µg/kg	
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	7.2	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	48	µg/kg	
	60	N	SOM01.2_CVOL	1,2,4-Trichlorobenzene	--	2.3	µg/kg	J
	70	N	SOM01.2_CVOL	2-Butanone (MEK)	--	8.6	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	95	µg/kg	
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	27	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	190	µg/kg	
		N	SOM01.2_CVOL	Benzene	--	1.3	µg/kg	J
SB-17	14	N	SOM01.2_CVOL	2-Butanone (MEK)	--	24	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	150	µg/kg	
		N	SOM01.2_CVOL	Chloroform	--	0.69	µg/kg	J
	20	N	SOM01.2_CVOL	2-Butanone (MEK)	--	12	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	63	µg/kg	
	30	N	SOM01.2_CVOL	2-Butanone (MEK)	--	12	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	120	µg/kg	

TABLE 6-2
Chemicals Detected in Post-Heating Soil Borings
Frontier Fertilizer Superfund Site, Davis, California

Location	Depth (feet bgs)	QA/QC Type	Method	Analyte	Soil RAO	Result	Units	Flag
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	21	µg/kg	
		FD	SOM01.2_CVOL	2-Butanone (MEK)	--	20	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	200	µg/kg	
		FD	SOM01.2_CVOL	Acetone	--	200	µg/kg	
	50	N	SOM01.2_CVOL	2-Butanone (MEK)	--	18	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	130	µg/kg	
	59	N	SOM01.2_CVOL	2-Butanone (MEK)	--	20	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	200	µg/kg	
SB-18	18	N	SOM01.2_CVOL	2-Butanone (MEK)	--	110	µg/kg	
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	2.3	µg/kg	J
		N	SOM01.2_CVOL	Toluene	--	0.73	µg/kg	J
	30	N	SOM01.2_CVOL	Acetone	--	110	µg/kg	
	40	N	SOM01.2_CVOL	2-Butanone (MEK)	--	140	µg/kg	
		N	SOM01.2_CVOL	4-Methyl-2-pentanone (pentanone)	--	3	µg/kg	J
		N	SOM01.2_CVOL	Acetone	--	1300	µg/kg	
	60	N	SOM01.2_CVOL	2-Butanone (MEK)	--	3.3	µg/kg	J
	70	FD	SOM01.2_CVOL	2-Butanone (MEK)	--	11	µg/kg	
		N	SOM01.2_CVOL	2-Butanone (MEK)	--	9.4	µg/kg	J
		FD	SOM01.2_CVOL	Acetone	--	85	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	76	µg/kg	
	80	N	SOM01.2_CVOL	2-Butanone (MEK)	--	28	µg/kg	
		N	SOM01.2_CVOL	Acetone	--	350	µg/kg	
		N	SOM01.2_CVOL	Benzene	--	0.93	µg/kg	J

Notes:

-- = No RAO established
SOM01.2 CVOL = EPA CLP Multi-Concentration Organics Analysis for VOCs
FD = field duplicate
J = The reported result for this analyte should be considered an estimated value.
N = primary sample

SECTION 7

ISTT Performance

7.1 Comparison of Pre-heating and Post-heating Groundwater Concentrations

Table 7-1 presents COC detections from pre-heating and post-heating sample events. After ISTT, no COCs were detected above the RAOs inside the ISTT volume. Inside the ISTT volume, reductions of COCs were as high as 99.999 percent (EDB in FF-2).

TABLE 7-1
Pre- and Post-Heating Groundwater Results
Frontier Fertilizer Superfund Site, Davis, California

Well ID	Screen Depth (feet bgs)	Location	Post Heating Results (3Q2013) in µg/L				Pre-Heating Results (4Q2008) in µg/L			
			DCP	EDB	DBCP	TCP	DCP	EDB	DBCP	TCP
DD-3	55 to 65	Inside ISTT	0.35 J	ND (0.005)	ND (0.01)	0.014	**20**	**0.38**	ND	ND
DD-4	74 to 84	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	0.01	**22**	4	0.017 J	ND
EE-2	60 to 70	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	**3,200**	**1,300**	0.035	**150**
EE-3	46 to 56	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	**14**	**0.62**	ND	ND
EE-4	73 to 83	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	**110**	**3.6**	**42**	**19**
FF-1	44 to 54	Inside ISTT	1.2	0.004 J	ND (0.01)	0.4	**8.2**	**0.63**	ND	ND
FF-2	74 to 84	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	0.055	**8,800**	**2,700**	ND	**230 J**
FF-3	47 to 57	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	0.009	**65**	**2.8**	0.039	ND
GG-2	76 to 86	Inside ISTT	ND (0.5)	ND (0.005)	ND (0.01)	0.001 J	**2,300**	**720**	ND	110
GG-3	73 to 83	Inside ISTT	Well Abandoned for ISTT Installation				**100**	ND	ND	2.7 J
AA-1	37 to 47	Perimeter, upgradient	0.73	ND (0.005)	ND (0.01)	ND (0.002)	ND	ND	ND	ND
BB-1	74 to 84	Perimeter, upgradient	0.45 J	ND (0.005)	ND (0.01)	0.006	ND	ND	ND	ND
BB-2	72 to 82	Perimeter, upgradient	**86**	ND (0.005)	ND (0.01)	0.15	**39**	0.018	ND	ND
BB-3	74 to 84	Perimeter, upgradient	0.82	ND (0.005)	ND (0.01)	0.009	ND	0.024	ND	ND
CC-1	76 to 86	Perimeter	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	ND	ND	ND	ND
CC-2	40 to 50	Perimeter	3	ND (0.005)	ND (0.01)	0.003 J	ND	0.049	ND	ND
CC-3	55 to 65	Perimeter, below	**32**	**0.45**	ND (0.01)	**1.6**	**35**	0.31	ND	ND
CC-4	76 to 86	Perimeter, below	**16**	ND (0.005)	ND (0.01)	0.03	**8.2**	0.038	ND	ND
CC-5	52 to 62	Perimeter	0.21 J	**0.06**	0.007 J	0.003 J	ND	**0.065**	ND	ND
CC-6	44 to 54	Perimeter	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	ND	ND	ND	ND
DD-1	71 to 81	Perimeter	3.7	ND (0.005)	ND (0.01)	ND (0.005)	ND	ND	ND	ND
DD-2	36 to 46	Perimeter, edge	3.7	0.044	ND (0.01)	0.16	3.1 J	0.032	ND	ND
DD-5	74 to 84	Perimeter	0.23 J	ND (0.005)	ND (0.01)	ND (0.005)	ND	ND	ND	ND

TABLE 7-1
Pre- and Post-Heating Groundwater Results
Frontier Fertilizer Superfund Site, Davis, California

Well ID	Screen Depth (feet bgs)	Location	Post Heating Results (3Q2013) in µg/L				Pre-Heating Results (4Q2008) in µg/L			
			DCP	**EDB**	**DBCP**	**TCP**	**DCP**	**EDB**	**DBCP**	**TCP**
DD-6	40 to 50	Perimeter	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	ND	0.022	ND	ND
EE-1	83 to 93	Perimeter, edge	Well Abandoned for ISTT Installation				**230**	**0.89**	ND	**7.7**
EE-5	75 to 85	Perimeter	1.1	ND (0.005)	ND (0.01)	0.01	ND	ND	ND	ND
GG-1	78 to 88	Perimeter	ND (0.5)	ND (0.005)	ND (0.01)	ND (0.005)	ND	0.01	ND	ND
GG-4	80 to 90	Perimeter	**9.8**	**0.16**	0.15	**0.63 J**	**63**	**0.32**	**0.41**	ND
AW-2A	13 to 43	Perimeter	2.1	ND (0.5)	ND (0.5)	ND-R (0.5)	0.5	ND	ND	ND
AW-2B	73 to 93	Perimeter	**7.6**	ND (0.5)	ND (0.5)	0.42 J	**66**	**0.22**	**0.25**	**3.8**
MW-4C	114 to 124	Perimeter, below	Not Sampled				ND	ND	ND	ND
MW-7A	12.5 to 30	Perimeter, downgradient	1.9[a]	ND (0.5)[a]	ND (0.5)[a]	0.68[a]	**490**	**15 J**	**2.5**	**62**
MW-7B	36 to 46	Perimeter, downgradient, extraction well	**20**	**0.77**	ND(0.5)	**2.4 J**	**240**	**1.3**	ND	**29**
MW-7D	114 to 124	Perimeter, downgradient	**5.2**	ND (0.5)	ND (0.5)	ND-R (0.5)	ND	ND	ND	ND
X-1A	31 to 51	Perimeter, downgradient, extraction well	1.0	**0.15 J**	ND (0.5)	0.42 J	**87**	**1.5**	ND	**6.9**
X-1B	65 to 85	Perimeter, downgradient	**90**	**0.28 J**	ND (0.5)	**6.9 J**	**310**	**2.3**	ND	**16**
X-1C	111 to 131	Perimeter, downgradient	3.3	ND (0.5)	ND (0.5)	ND-R (0.5)	0.69	ND	ND	ND
X-6A	20 to 60	Perimeter, downgradient	**230**	**8.6**	**2.8**	**33 J**	**960**	**0.4**	0.12	**9.8**
X-6B	67 to 97	Perimeter, downgradient, extraction well	**86 J**	**3.8**	ND (0.5)	4.0 J	**260**	**70**	**0.83**	**11**

[a] Results are from second quarter 2013 because of low water level in third quarter 2013.

Notes:

The increased frequency of TCP in the post-heating results is likely because of lower reporting limits due to a revised analytical method between the 2008 and 2013 events. Pre-heating results for TCP are by Method 524.2 with typical reporting limit of 0.5 µg/L. Post-heating results by Method 524.2SIM with typical reporting limit of 0.005 µg/L.

Reporting limit included in parentheses for post-heating samples.

3Q2013 results from August – September 2013.
4Q2008 results from December 2008.

Bold values exceed RAOs.

ND* = only 524.2 result, no 524.2SIM result available
ND-R = Non-detect, data qualified as rejected from laboratory

Wells with significant COC reductions also experienced a drop in pH of an order of magnitude; wells DD-4, EE-2, EE-3, FF-2, FF-3, and GG-2 all had a post-ISTT pH of less than 6.8 and other wells inside the ISTT volume ranged from 7.1 to 7.3. Pre-ISTT the well pH inside the ISTT volume ranged from 7 to 9. A drop in pH is expected as halogenated VOCs (HVOCs) are degraded by either hydrolysis or dehydrohalogenation. In hydrolysis, hydroxyl ions are substituted for halogens on the HVOC, which increases the proportion of hydrogen ions in solution and lowers the pH. In dehydrohalogenation, a hydrogen ion and a halogen ion are released to solution and a double bond is formed between carbon atoms on the remaining molecule. The release of the hydrogen ion causes an increase in hydrogen ion concentrations and lowers pH.

Redox potential for wells DD-4, EE-2, EE-3, FF-2, FF-3, and GG-2 showed no significant change and post-heating varied from 88 to 110 millivolts (mV), with the exception of GG-2 which was 6 mV. Conductivity readings were not meaningful for comparison since the addition of electrolyte during heating would impact the results. Similarly, temperature was also not meaningful due to the cooling coil use for groundwater sample collection.

Downgradient wells X-1A and X-1B are located near the ISTT volume with X-1A about 6 feet from an electrode. As a result of the proximity to heating elements, X-1A reached temperatures as high as 80°C and X-1B neared 60°C (Appendix A, External TMW plots), which likely treated the COCs to some extent. Concentrations of all COCs in these wells have decreased since ISTT.

MW-7D is screened below the deepest ISTT depth. During post-heating sampling, analytical results indicate that DCP was above the RAO, whereas it was previously non-detect during fourth quarter 2008. While MW-7D was non-detect in 4Q2008, it is more common for this well to have low levels of DCP; for the two quarters prior to the start of ISTT (third and fourth quarters 2010) DCP results were 2.1 and 2.0 µg/L, respectively. The recent DCP detection (5.2 µg/L) is similar to pre-heating results.

Wells MW-7A and MW-7B both experienced reductions in COCs. During treatment MW-7A reached temperatures of 45°C and analytical results do indicate the present of acetone (over 100 µg/L), which likely means water from the thermal treatment has reached MW-7A, which would be expected for a downgradient well. While MW-7A shows two orders of magnitude reduction in COCs, MW-7B shows one order of magnitude, which is likely because this well is operated as an extraction well, and also because due to the radial nature of extraction the less-contaminated water from the south is being mixed with contaminated water from the north.

Downgradient wells X-6A and X-6B both showed reduction of DCP by approximately 75 percent. X-6B is operated as an extraction well and reached temperatures of around 35°C during operation, which indicates that the well was pulling some of the treated water from the thermal treatment. X-6A is a monitoring well and only exhibited about a 3 to 4°C rise during thermal treatment. X-6A results indicated slightly higher EDB and DBCP concentrations than prior to heating. During heating, concentrations of COCs increased significantly at X-6A (for example, 1,400 µg/L DCP and 93 µg/L EDB in 3Q12); however, the temperature at this well remained within background readings at 20°C and the 3Q12 result did not contain detectable acetone. The reduction of X-6B extraction during ISTT may have elevated X-6A concentrations due to a lessened vertical gradient. The concentrations in X-6a during 3Q12 were similar to those observed during 2004 when X-6b was also not extracting (maximum 2004 results at X-6A were 1,100 µg/L DCP and 60 µg/L EDB).

Well AW-2A indicates a slight increase in DCP; however, results are still below the RAOs. Well AW-2B shows a reduction in COCs, primarily DCP; however, because a declining trend was observed before ISTT started and this well is crossgradient to the ISTT, the reduction may be the result of other processes (for example, pump and treat).

7.2 Residual Mass Calculation

As previously described, the pre-heating mass estimate of COCs in the ISTT volume was 57.4 pounds. The post-heating mass estimate was calculated using the post-heating contaminant concentrations and is presented in Table 7-2. Due to the mathematical model input restrictions on COC concentrations, it was not possible to use zero in the place of non-detect results. Thus, to capture non-detect values, 50 percent of the method detection limit was used. Using a small concentration resulted in an estimated residual post-heating contaminant mass. For example, detections of DBCP were not found in the ISTT soil post-heating, but because a percentage of the reporting limit was used for mass extrapolation, a small amount of mass is estimated. The mass reduction for each COC is greater than 95 percent.

TABLE 7-2
ISTT Volume COC Mass Estimate Pre- and Post-Heating
Frontier Fertilizer Superfund Site, Davis, California

COC	Pre-Heating Mass Estimate (lbs)	Post-Heating Mass Estimate (lbs)
DCP	40.4	< 0.12
EDB	9.7	< 0.16
DBCP	2.2	< 0.11
TCP	5.1	< 0.13
Total	**57.4**	**< 0.5**

SECTION 8

ISTT Decommissioning

In 2014, the electrodes were abandoned and the fugitive emission cap was removed. This final decommissioning is documented in Appendix F.

SECTION 9

Conclusions and Recommendations for Future Implementations

9.1 Conclusions

The ISTT was effective at remediating 52,478 cubic yards of soil and groundwater using nearly 7,000,000 kWh of power, with a power density around 133 kWh per cubic yard. During operation the soil vacuum extraction system captured 79.4 lbs of COCs, which were predominantly DCP (52.5 lbs) and TCP (23.0 lbs). In addition to captured COCs there was some evidence that hydrolysis occurred and increased the amount of COCs treated.

Soil sampling results indicate that soil concentrations were all below the remedial action objectives. Calculations of pre- and post-treatment COC mass indicate an over 95 percent reduction. Groundwater concentrations inside the ISTT volume were also below remedial action objectives. Groundwater concentrations for specific COCs in select wells were reduced by as much as 99.99 percent.

Over 500 ambient air samples were collected without any detections of COCs above the RALs.

Wells north, or downgradient, of the ISTT volume have reduced COC concentrations that may continue to decline now that the source of mass has been reduced.

9.2 Recommendations for Future Implementations

Having completed the ISTT at Frontier Fertilizer there is now an opportunity to evaluate the process and look for information that may benefit future thermal treatment projects. Recommendations to benefit future thermal projects are listed below:

- Stakeholder communication and involvement early in the process can identify concerns and allow time to develop an effective and efficient response.
- Availability of sufficient electrical power decreases overall heating time and resulting daily operation costs. Nearby commercial developments reduced the available energy for the Frontier Fertilizer ISTT which resulted in three consecutive stages of heating. Operating in stages did allow lessons learned from Stage 1 to improve the effectiveness of Stages 2 and 3; however, due to the longer operating time the project incurred higher operational and monitoring costs.
- Design criteria changes should be minimized. Changes to the treatment volume as a result of additional contamination discovery extended the design phase. In addition, changes to the design and operation as a result of power limitations also extended the design and planning phase.
- It is important to compare the costs of accelerated analytical results against operating costs. At various stages of operation, opting for accelerated analytical reports was either cost-effective or critical to monitoring system protectiveness of worker and nearby residents.
- A backup laboratory should be identified and contracted for critical samples. At least once, one of the analytical laboratories received and analyzed highly contaminated samples from another project, which fouled equipment and stopped acceptance of Frontier Fertilizer samples. Without a secondary laboratory there would have been data gaps.
- A well-defined shutdown plan is necessary. The operating costs for ISTT are high and the system should be operated for as short a period as necessary. Updates on Frontier Fertilizer operations were conducted weekly and shutdown recommendations were reviewed by DTSC and the Water Board

quickly. If stakeholders had not remained involved and cooperative, operations could have continued for a longer period than necessary.

- As has been noted at other ISTT sites, subsurface temperatures at ISTT sites, even within the saturated zone, may stay elevated for extended periods after shutdown. In cases where enhanced hydrolysis may play a role in COC degradation, this may provide an important enhancement to the overall treatment results. In the case of Frontier Fertilizer, post-ISTT sampling was delayed for approximately 8 months after shutdown.

SECTION 10
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Appendix A
ISTT Operations Data

A1 Daily ISTT Operational Data: Uptime, power, vapor flow rate, influent COC sample dates and results, cumulative contaminant mass removal

A2 Electrode Analytical Data Summary Tables

A3 External Monitoring Well Temperature Data Plots

A4 ISTT Liquid Treatment Train Sample Result Summary

A5 Electrode and TMW Installation Logs (CD only)

A6 ISTT Analytical Data Packages (CD only)

- Electrode data, vapor matrix
- Process data, vapor matrix
- Process data, liquid matrix
- Data Validation Reports

A7 Stage Shutdown Recommendations (CD only)

A8 Photo Log

Frontier Fertilizer ISTT Operation and Mass Removal Data																			
Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
3/1/2011	0:00:07		33289			23	400		3/3/2011	1.0		5.9		0.2	0.0	0.0	0.0	0.0	0.0
3/6/2011	0:01:19	24	63095			137	469		3/3/2011	1.0		5.9		1.4	0.0	0.1	0.2	0.0	0.0
3/7/2011	14:00:12	10	74379			174	450		3/10/2011	1.1		3.9		1.6	0.0	0.1	0.2	0.0	0.0
3/8/2011	15:00:03	19	83176			194	445		3/10/2011	1.1		3.9		1.8	0.0	0.1	0.2	0.0	0.0
3/9/2011	14:00:12	16	91281			216	556		3/10/2011	1.1		3.9		1.9	0.0	0.1	0.3	0.0	0.0
3/10/2011	14:00:07	22	100495			240	505		3/10/2011	1.1		3.9		2.1	0.0	0.1	0.3	0.0	0.0
3/11/2011	16:00:12	13.5	106093			265	530		3/10/2011	1.1		3.9		2.3	0.0	0.1	0.3	0.0	0.0
3/13/2011	0:00:10	0	110189			296	482.3		3/10/2011	1.1		3.9		2.5	0.0	0.1	0.4	0.0	0.0
3/14/2011	0:00:04	0	110189			318	425.7		3/10/2011	1.1		3.9		2.7	0.0	0.2	0.4	0.0	0.0
3/15/2011	0:00:02	0	110189			341	433.1		3/10/2011	1.1		3.9		2.8	0.0	0.2	0.5	0.0	0.0
3/16/2011	0:00:12	0	110189			364	743.4		3/10/2011	1.1		3.9		3.0	0.0	0.2	0.5	0.0	0.0
3/17/2011	0:00:13	8	113668			388	730.3		3/10/2011	1.1		3.9		3.3	0.0	0.2	0.5	0.0	0.0
3/17/2011	23:59:58	24	124754			412	602		3/18/2011	0.3		1.7		3.4	0.0	0.2	0.5	0.0	0.0
3/18/2011	23:59:57	24	135590			436	777		3/18/2011	0.3		1.7		3.5	0.0	0.2	0.5	0.0	0.0
3/20/2011	0:01:38	9	138759			452	580		3/18/2011	0.3		1.7		3.6	0.0	0.2	0.5	0.0	0.0
3/21/2011	0:01:36	16	143228			467	380		3/18/2011	0.3		1.7		3.6	0.0	0.2	0.6	0.0	0.0
3/22/2011	0:01:22	9	147453			478	756		3/18/2011	0.3		1.7		3.7	0.0	0.2	0.6	0.0	0.0
3/23/2011	0:01:19	24	158749			502	657		3/18/2011	0.3		1.7		3.7	0.0	0.2	0.6	0.0	0.0
3/24/2011	0:01:18	24	169958			525	663		3/25/2011	0.1		0.7		3.8	0.0	0.2	0.6	0.0	0.0
3/25/2011	0:00:05	12	174992			543	615		3/25/2011	0.1		0.7		3.8	0.0	0.2	0.6	0.0	0.0
3/26/2011	0:00:03	23	185711			566	638		3/25/2011	0.1		0.7		3.8	0.0	0.2	0.6	0.0	0.0
3/27/2011	0:00:01	24	196656			590	662		3/25/2011	0.1		0.7		3.9	0.0	0.2	0.6	0.0	0.0
3/28/2011	0:00:01	4	198818			608	644		3/25/2011	0.1		0.7		3.9	0.0	0.2	0.6	0.0	0.0
3/29/2011	0:00:59	13	204799			632	617		3/25/2011	0.1		0.7		4.0	0.0	0.2	0.6	0.0	0.0
3/30/2011	0:00:57	24	216075			655	684.6		3/25/2011	0.1		0.7		4.0	0.0	0.2	0.6	0.0	0.0
3/31/2011	0:00:56	20	224857			679	625		3/25/2011	0.1		0.7		4.0	0.0	0.2	0.6	0.0	0.0
4/1/2011	0:00:13	23	233257			700	757		3/25/2011	0.1		0.7		4.1	0.0	0.2	0.6	0.0	0.0
4/2/2011	0:00:11	22	243106			723	771.3		4/6/2011	0.4		0.6		4.1	0.0	0.2	0.6	0.0	0.0
4/3/2011	0:00:09	24	252036			747	772		4/6/2011	0.4		0.6		4.2	0.0	0.3	0.6	0.0	0.0
4/4/2011	0:59:58	24	260444			771	750		4/6/2011	0.4		0.6		4.2	0.0	0.3	0.6	0.0	0.0
4/5/2011	0:59:56	21	266141			795	721		4/6/2011	0.4		0.6		4.3	0.0	0.3	0.6	0.0	0.0
4/6/2011	0:00:06	19	271706			818	748		4/9/2011	0.05		0.12		4.3	0.0	0.3	0.6	0.0	0.0
4/7/2011	0:00:04	20	278890			841	720		4/9/2011	0.05		0.12		4.3	0.0	0.3	0.6	0.0	0.0
4/8/2011	0:00:01	23	287913			866	752		4/13/2011	0.1		0.2		4.3	0.0	0.3	0.6	0.0	0.0
4/9/2011	0:00:59	24	297767			888	774		4/13/2011	0.14		0.24		4.3	0.0	0.3	0.7	0.0	0.0
4/10/2011	0:00:58	24	307623			911	719		4/13/2011	0.14		0.24		4.3	0.0	0.3	0.7	0.0	0.0
4/11/2011	0:00:43	24	317783			935	747		4/13/2011	0.14		0.24		4.3	0.0	0.3	0.7	0.0	0.0
4/12/2011	0:00:12	21	325119			958	727		4/13/2011	0.14		0.24		4.3	0.0	0.3	0.7	0.0	0.0
4/13/2011	0:00:10	18	332917			982	763		4/13/2011	0.14		0.24		4.4	0.0	0.3	0.7	0.0	0.0
4/14/2011	0:00:18	24	342942			1,005	733		4/13/2011	0.14		0.24		4.4	0.0	0.3	0.7	0.0	0.0
4/15/2011	0:00:47	24	354059			1,028	731		4/19/2011	0.19		0.24		4.4	0.0	0.3	0.7	0.0	0.0
4/16/2011	0:00:45	24	363839			1,050	716		4/19/2011	0.19		0.24		4.4	0.0	0.3	0.7	0.0	0.0
4/17/2011	0:00:43	20	372535			1,068	712		4/19/2011	0.19		0.24		4.42	0.0	0.3	0.7	0.0	0.0
4/18/2011	0:00:41	10	377752			1,079	450		4/22/2011	0.15		0.22		4.42	0.0	0.3	0.7	0.0	0.0
4/19/2011	0:00:27	15	384285			1,093	655		4/22/2011	0.17		0.23		4.43	0.0	0.3	0.7	0.0	0.0
4/20/2011	0:00:23	23	395107			1,115	707		4/22/2011	0.17		0.23		4.44	0.1	0.3	0.7	0.0	0.0
4/21/2011	0:00:21	23	405753			1,138	684		4/22/2011	0.21		0.30		4.46	0.1	0.3	0.7	0.0	0.0
4/22/2011	0:01:11	24	416261			1,159	731		4/22/2011	0.21		0.30		4.47	0.1	0.3	0.7	0.0	0.0
4/23/2011	0:01:09	24	427445			1,181	703.6		4/22/2011	0.21		0.30		4.49	0.1	0.3	0.7	0.0	0.0
4/24/2011	0:01:06	24	438626			1,204	695		4/22/2011	0.21		0.30		4.51	0.1	0.3	0.7	0.0	0.0
4/25/2011	0:00:51	24	449825			1,226	675.2		4/22/2011	0.21		0.30		4.52	0.1	0.3	0.7	0.0	0.0
4/26/2011	0:00:49	24	460969			1,249	710.8		5/4/2011	0.19		0.29		4.54	0.1	0.3	0.8	0.0	0.0
4/27/2011	0:00:46	22.9	471441			1,272	698.9		5/4/2011	0.19		0.29		4.56	0.1	0.3	0.8	0.0	0.0
4/28/2011	0:00:44	24	482273			1,294	696.8		5/6/2011	0.10		0.17		4.57	0.1	0.3	0.8	0.0	0.0

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
4/29/2011	0:01:34	22.9	492748			1,317	694.2		5/6/2011	0.08		0.11		4.57	0.1	0.3	0.8	0.0	0.0
4/30/2011	0:00:07	17.5	500560			1,340	684.5		5/6/2011	0.08		0.11		4.58	0.1	0.3	0.8	0.0	0.0
5/1/2011	0:00:05	24	511721			1,362	690.1		5/6/2011	0.08		0.11		4.59	0.1	0.3	0.8	0.0	0.0
5/2/2011	0:00:02	24	522930			1,384	659.1		5/6/2011	0.08		0.11		4.59	0.1	0.3	0.8	0.0	0.0
5/3/2011	0:00:00	18	531064			1,408	700.1		5/8/2011	0.19		0.25		4.61	0.1	0.3	0.8	0.0	0.0
5/3/2011	23:59:58	17	538848			1,431	660.4		5/8/2011	0.19		0.25		4.62	0.1	0.3	0.8	0.0	0.0
5/4/2011	23:59:56	16	546040			1,455	635.6		5/8/2011	0.04		0.06		4.63	0.1	0.3	0.8	0.0	0.0
5/6/2011	0:01:04	17	553719			1,479	627.2		5/10/2011	0.12		0.16		4.63	0.1	0.3	0.8	0.0	0.0
5/7/2011	0:00:48	17	561293			1,502	838.7		5/10/2011	0.12		0.16		4.65	0.1	0.3	0.8	0.0	0.0
5/8/2011	0:00:46	24	572182			1,525	857.8		5/10/2011	0.12		0.16		4.66	0.1	0.3	0.8	0.0	0.0
5/9/2011	0:00:44	24	583093			1,548	850.4		5/10/2011	0.12		0.16		4.67	0.1	0.4	0.8	0.0	0.0
5/10/2011	0:00:42	16	590274			1,568	663.5		5/17/2011	0.28		0.78		4.72	0.1	0.4	0.9	0.0	0.0
5/11/2011	0:00:07	15	597417			1,592	743.4		5/17/2011	0.13		0.19		4.73	0.1	0.4	0.9	0.0	0.0
5/12/2011	0:00:06	16	604721			1,614	765.3		5/17/2011	0.13		0.19		4.74	0.1	0.4	0.9	0.0	0.0
5/13/2011	0:00:57	16	611957			1,637	700.6		5/17/2011	0.16		0.24		4.75	0.1	0.4	0.9	0.0	0.0
5/14/2011	0:00:55	16	619014			1,660	751.4		5/17/2011	0.16		0.24		4.77	0.1	0.4	0.9	0.0	0.0
5/15/2011	0:00:39	24	630116			1,683	746		5/17/2011	0.16		0.24		4.78	0.1	0.4	0.9	0.0	0.0
5/16/2011	0:00:38	24	641219			1,705	778		5/17/2011	0.16		0.24		4.80	0.1	0.4	0.9	0.0	0.0
5/17/2011	0:00:36	16	648359			1,728	767.0		5/24/2011	0.37		0.42		4.83	0.1	0.4	0.9	0.0	0.0
5/18/2011	0:00:20	16	655117			1,751	757.9		5/24/2011	0.37		0.42		4.85	0.1	0.4	1.0	0.0	0.0
5/19/2011	0:00:31	13	660921			1,767	531		5/24/2011	0.19		0.22		4.86	0.1	0.4	1.0	0.0	0.0
5/20/2011	0:01:08	15	667577			1,790	720.4		5/26/2011	0.19		0.23		4.87	0.1	0.4	1.0	0.0	0.0
5/21/2011	0:01:07	19	675921			1,813	742.4		5/26/2011	0.19		0.23		4.89	0.1	0.4	1.0	0.0	0.0
5/22/2011	0:01:05	24	687050			1,836	701.1		5/26/2011	0.19		0.23		4.90	0.1	0.4	1.0	0.0	0.0
5/23/2011	0:01:03	22	697333			1,856	750.8		5/26/2011	0.19		0.23		4.92	0.1	0.4	1.0	0.0	0.0
5/24/2011	0:01:00	13	702658			1,878	725.8		5/26/2011	0.19		0.23		4.93	0.1	0.4	1.0	0.0	0.0
5/25/2011	0:00:10	16	709742			1,901	739.9		5/26/2011	0.19		0.23		4.94	0.1	0.4	1.0	0.0	0.0
5/26/2011	0:00:08	17	717056			1,924	719.4		5/26/2011	0.19		0.23		4.96	0.1	0.4	1.0	0.0	0.0
5/27/2011	0:00:46	16	724190			1,947	744		5/26/2011	0.19		0.23		4.97	0.1	0.4	1.1	0.0	0.0
5/28/2011	0:00:07	17	731932			1,970	728.9		5/26/2011	0.19		0.23		4.99	0.1	0.4	1.1	0.0	0.0
5/29/2011	0:00:04	24	743470			1,993	714.7		5/26/2011	0.19		0.23		5.00	0.1	0.4	1.1	0.0	0.0
5/30/2011	0:00:03	24	754920			2,015	680.2		5/31/2011	0.19		0.31		5.0	0.1	0.4	1.1	0.0	0.0
5/30/2011	23:59:48	24	766388			2,038	697.4		5/31/2011	0.19		0.31		5.0	0.1	0.4	1.1	0.0	0.0
5/31/2011	23:59:46	16	773945			2,061	711.4		5/31/2011	0.19		0.31		5.1	0.1	0.4	1.1	0.0	0.0
6/1/2011	23:59:43	16	781269			2,084	683.2		6/2/2011	0.26		0.43		5.1	0.1	0.4	1.1	0.0	0.0
6/3/2011	0:00:11	16	788778			2,106	683.5		6/2/2011	0.26		0.43		5.1	0.1	0.4	1.1	0.0	0.0
6/4/2011	0:00:11	14	794647			2,129	678.3		6/2/2011	0.26		0.43		5.1	0.1	0.4	1.1	0.0	0.0
6/5/2011	0:00:09	24	805866			2,152	613.2		6/2/2011	0.26		0.43		5.2	0.1	0.4	1.2	0.0	0.0
6/6/2011	0:00:07	24	817073			2,175	607		6/8/2011	0.2		0.42		5.2	0.1	0.4	1.2	0.0	0.0
6/7/2011	0:00:04	24	828408			2,199	650		6/8/2011	0.2		0.42		5.2	0.1	0.4	1.2	0.0	0.0
6/8/2011	0:00:02	16	835782			2,222	658		6/10/2011	0.2		0.44		5.2	0.1	0.4	1.2	0.0	0.0
6/9/2011	0:59:52	16	843412			2,245	640.5		6/10/2011	0.2		0.44		5.2	0.1	0.4	1.2	0.0	0.0
6/10/2011	0:00:39	13	848968			2,269	670.2		6/15/2011	0.05		0.14		5.3	0.1	0.4	1.2	0.0	0.0
6/11/2011	0:00:09	16	854752			2,293	270		6/15/2011	0.05		0.14		5.3	0.1	0.4	1.2	0.0	0.0
6/12/2011	0:00:07	17	862535			2,316	638.7		6/15/2011	0.05		0.14		5.3	0.1	0.4	1.2	0.0	0.0
6/13/2011	0:00:05	24	874265			2,339	645		6/16/2011	0.1		0.16		5.3	0.1	0.4	1.2	0.0	0.0
6/14/2011	0:00:05	20	883704			2,362	698.4		6/16/2011	0.1		0.16		5.3	0.1	0.4	1.2	0.0	0.0
6/15/2011	0:00:02	18	892032			2,386	716.9		6/16/2011	0.1		0.16		5.3	0.1	0.4	1.2	0.0	0.0
6/16/2011	0:00:14	19	900827			2,409	702.1		6/20/2011	0.1		0.43		5.3	0.1	0.4	1.2	0.0	0.0
6/17/2011	0:01:08	16	908212			2,432	643.4		6/20/2011	0.3		0.59		5.4	0.1	0.4	1.2	0.0	0.0
6/18/2011	0:00:13	15	916365			2,455	802.2		6/20/2011	0.3		0.59		5.4	0.1	0.4	1.2	0.0	0.0
6/19/2011	0:00:11	24	928190			2,476	783.8		6/20/2011	0.3		0.59		5.4	0.1	0.4	1.3	0.0	0.0
6/20/2011	0:00:08	24	940126			2,500	620		6/20/2011	0.3		0.59		5.5	0.1	0.4	1.3	0.0	0.0
6/21/2011	0:00:15	19	949163			2,521	784		6/20/2011	0.3		0.59		5.5	0.1	0.4	1.3	0.0	0.0
6/22/2011	0:00:13	15	956732			2,543	799		6/24/2011	0.2		0.45		5.5	0.1	0.4	1.3	0.0	0.0

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
6/23/2011	0:00:12	7	960581			2,570	977		6/24/2011	0.2		0.45		5.6	0.1	0.5	1.3	0.0	0.0
6/24/2011	0:00:10	0	960620			2,594	763		6/24/2011	0.2		0.45		5.6	0.1	0.5	1.3	0.0	0.0
6/25/2011	0:00:18	1	960875			2,618	687		6/24/2011	0.2		0.45		5.6	0.1	0.5	1.3	0.0	0.0
6/26/2011	0:00:08	7	964084			2,642	740.6		6/24/2011	0.2		0.45		5.7	0.2	0.5	1.3	0.0	0.0
6/27/2011	0:00:20	18	972997			2,666	707		6/24/2011	0.2		0.45		5.7	0.2	0.5	1.3	0.0	0.0
6/28/2011	0:00:13	12	978572			2,690	713		7/5/2011	0.2		0.37		5.7	0.2	0.5	1.3	0.0	0.1
6/29/2011	0:00:13	10	982748			2,714	708.5		7/5/2011	0.2		0.37		5.7	0.2	0.5	1.4	0.0	0.1
6/29/2011	23:59:58	12	988939			2,738	621		7/5/2011	0.5		0.61		5.8	0.2	0.5	1.4	0.0	0.1
7/1/2011	0:00:49	10	993114			2,762	669		7/5/2011	0.2		0.30		5.8	0.2	0.5	1.4	0.0	0.1
7/2/2011	0:00:07	20	1002023			2,786	684		7/5/2011	0.2		0.30		5.8	0.2	0.5	1.4	0.0	0.1
7/3/2011	0:00:06	24	1012787			2,810	707		7/5/2011	0.2		0.30		5.8	0.2	0.5	1.4	0.0	0.1
7/4/2011	0:00:17	23	1022572			2,834	597		7/5/2011	0.2		0.30		5.8	0.2	0.5	1.4	0.0	0.1
7/5/2011	0:00:14	5	1024529			2,858	335		7/7/2011	0.1		0.22		5.9	0.2	0.5	1.4	0.0	0.1
7/6/2011	0:00:14	20	1033152			2,882	741		7/7/2011	0.1		0.16		5.9	0.2	0.5	1.4	0.0	0.1
7/7/2011	0:00:11	16	1040173			2,906	756		7/7/2011	0.1		0.16		5.9	0.2	0.5	1.4	0.0	0.1
7/8/2011	0:00:47	17	1046028			2,930	580		7/11/2011	0.6		0.87		5.9	0.2	0.5	1.4	0.0	0.1
7/9/2011	0:00:33	16	1052876			2,954	619		7/11/2011	0.6		0.87		6.0	0.2	0.6	1.5	0.0	0.1
7/10/2011	0:00:23	24	1063145			2,978	536		7/11/2011	0.6		0.87		6.0	0.2	0.6	1.5	0.1	0.1
7/11/2011	0:00:10	24	1073407			3,002	563		7/11/2011	0.6		0.87		6.1	0.2	0.6	1.5	0.1	0.1
7/12/2011	0:00:05	20.5	1081707			3,026	899		7/14/2011	0.2		0.45		6.1	0.2	0.6	1.5	0.1	0.1
7/13/2011	0:00:15	21	1089815			3,050	908		7/14/2011	0.2		0.44		6.1	0.2	0.6	1.5	0.1	0.1
7/14/2011	0:00:22	16	1096437			3,074	703		7/14/2011	0.2		0.44		6.2	0.2	0.6	1.5	0.1	0.1
7/15/2011	0:00:22	24	1106928	7235		3,098	741		7/18/2011	0.2		0.39		6.2	0.2	0.6	1.6	0.1	0.1
7/16/2011	0:00:12	17	1113990	8402		3,122	719		7/18/2011	0.2		0.39		6.2	0.2	0.6	1.6	0.1	0.1
7/17/2011	0:00:23	14	1119583	9971		3,146	508.7		7/18/2011	0.2		0.39		6.2	0.2	0.6	1.6	0.1	0.1
7/18/2011	0:00:20	15	1125549	12907		3,170	474		7/19/2011	0.2		0.35		6.2	0.2	0.6	1.6	0.1	0.1
7/19/2011	0:00:16	20	1133461	17449		3,194	682.5		7/19/2011	0.2		0.35		6.3	0.2	0.6	1.6	0.1	0.1
7/20/2011	0:00:14	20	1141856	17476		3,218	609.8		7/22/2011	0.2		0.27		6.3	0.2	0.6	1.6	0.1	0.1
7/21/2011	0:00:15	20	1149988	17476	24913	3,242	594.5		7/23/2011	0.2		0.35		6.3	0.2	0.6	1.6	0.1	0.1
7/22/2011	0:00:08	21	1158482	17495	25112	3,266	626.2		7/25/2011	0.1		0.27		6.3	0.3	0.6	1.6	0.1	0.1
7/23/2011	0:00:19	21	1167380	17782	25359	3,290	648.7		7/25/2011	0.1		0.27		6.3	0.3	0.6	1.6	0.1	0.1
7/24/2011	0:01:17	24	1177434	17782	25359	3,314	687.2		7/25/2011	0.1		0.27		6.3	0.3	0.6	1.6	0.1	0.1
7/25/2011	0:01:02	21	1186012	17782	25359	3,338	568		7/25/2011	0.1		0.27		6.4	0.3	0.6	1.6	0.1	0.1
7/26/2011	0:01:13	18	1193670	17782	25464	3,362	586		7/25/2011	0.1		0.27		6.4	0.3	0.6	1.6	0.1	0.1
7/27/2011	0:00:10	16	1200538	19194		3,386	625		7/29/2011	0.1		0.23		6.4	0.3	0.6	1.6	0.1	0.1
7/28/2011	0:00:52	24	1210778	23098	29358	3,410	674		7/29/2011	0.1		0.23		6.4	0.3	0.6	1.7	0.1	0.1
7/29/2011	0:01:04	20	1219552	28297	37761	3,434	663		8/2/2011	0.2		0.46		6.4	0.3	0.6	1.7	0.1	0.1
7/30/2011	0:00:49	23	1229608	32194	42090	3,458	700		8/2/2011	0.2		0.46		6.5	0.3	0.6	1.7	0.1	0.1
7/31/2011	0:00:16	24	1240244	40353	46374	3,482	675		8/2/2011	0.2		0.46		6.5	0.3	0.6	1.7	0.1	0.1
8/1/2011	0:00:15	24	1251742	49370	57210	3,506	633		8/2/2011	0.2		0.46		6.5	0.3	0.6	1.7	0.1	0.1
8/2/2011	0:00:01	17	1260031	55613	64939	3,530	717		8/2/2011	0.2		0.46		6.5	0.3	0.6	1.7	0.1	0.1
8/3/2011	0:00:12	16	1267548	60614	71407	3,554	622		8/4/2011	0.1		0.36		6.6	0.3	0.6	1.7	0.1	0.1
8/4/2011	0:00:49	19	1275738	66057	78481	3,578	447		8/4/2011	0.1		0.36		6.6	0.3	0.6	1.7	0.1	0.1
8/5/2011	0:00:13	17	1282923	68975	84811	3,602	481		8/4/2011	0.1		0.36		6.6	0.3	0.7	1.8	0.1	0.1
8/6/2011	0:00:11	20.5	1293178	74489	93794	3,626	629		8/4/2011	0.1		0.36		6.6	0.3	0.8	1.9	0.2	0.1
8/7/2011	0:00:08	24	1304669	84124	103752	3,650	614		8/4/2011	0.1		0.36		6.6	0.3	0.9	2.1	0.3	0.1
8/8/2011	0:00:06	24	1316171	93705	114103	3,674	401		8/4/2011	0.1		0.36		6.6	0.3	0.9	2.2	0.3	0.1
8/9/2011	0:00:04	23	1327329	102305	125090	3,698	935		8/4/2011	0.1		0.36		6.7	0.3	1.0	2.4	0.5	0.1
8/10/2011	0:00:16	14	1332760	104794	128071	3,722	919		8/18/2011	11.9		12.58		7.7	0.3	1.4	3.0	0.6	0.1
8/11/2011	6:00:07	18	1342349	112235	139052	3,752	1208		8/18/2011	11.9		12.58		9.1	0.3	1.9	3.9	0.7	0.1
8/12/2011	0:00:09	24	1349943	118379	147492	3,770	935		8/19/2011	5.4		5.95		9.7	0.3	2.0	4.1	0.7	0.1
8/13/2011	0:00:21	19	1357735	124580	151375	3,794	1022		8/19/2011	5.4		5.95		10.1	0.3	2.1	4.4	0.8	0.1
8/14/2011	0:00:06	24	1366972	132675	163605	3,818	787		8/19/2011	5.4		5.95		10.5	0.3	2.3	4.6	0.8	0.1
8/15/2011	0:00:11	24	1375935	140765	176183	3,842	684		8/21/2011	4.2		4.60		10.8	0.3	2.3	4.8	0.8	0.1
8/16/2011	0:00:10	19	1382795	146877	185756	3,866	745		8/21/2011	4.2		4.60		11.1	0.3	2.4	5.0	0.8	0.1

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
8/17/2011	0:00:08	16	1388359	152056	193811	3,890	609		8/24/2011	3.8		4.05		11.3	0.3	2.4	5.2	0.8	0.1
8/18/2011	0:00:06	16	1394264	157767	202476	3,914	677		8/24/2011	3.8		4.05		11.6	0.3	2.5	5.3	0.8	0.1
8/19/2011	0:00:03	14	1399376	162697	210534	3,938	680		8/26/2011	2.8		3.05		11.8	0.3	2.5	5.5	0.8	0.1
8/20/2011	0:01:15	24	1408394	170474	222873	3,962	797		8/26/2011	2.8		3.05		12.0	0.3	2.6	5.6	0.8	0.1
8/21/2011	0:01:00	24	1417785	175395	229250	3,986	725		8/26/2011	2.8		3.05		12.2	0.3	2.6	5.7	0.8	0.1
8/22/2011	0:00:59	24	1426931	181193	238196	4,010	727		8/26/2011	2.8		3.05		12.4	0.3	2.6	5.9	0.8	0.1
8/23/2011	0:00:57	17	1433338	186600	246544	4,034	715		8/27/2011	1.3		1.41		12.5	0.3	2.7	5.9	0.8	0.1
8/24/2011	0:00:55	16	1439098	189941	250698	4,058	722		8/27/2011	1.3		1.41		12.6	0.3	2.7	6.0	0.8	0.1
8/25/2011	0:00:08	8	1441226	192141	257943	4,082	686		8/27/2011	1.3		1.41		12.7	0.3	2.7	6.0	0.8	0.1
8/26/2011	0:00:06	10	1444337	194697	261734	4,106	746		8/28/2011	1.2		1.80		12.8	0.3	2.7	6.1	0.9	0.1
8/27/2011	0:00:21	16	1449176	197724	265066	4,130	803		8/28/2011	1.2		1.80		12.9	0.3	2.8	6.1	0.9	0.1
8/28/2011	0:00:18	24	1456352	200153	276153	4,154	640		8/28/2011	1.2		1.80		13.0	0.3	2.8	6.1	0.9	0.1
8/29/2011	0:01:06	24	1463705	203842	286857	4,178	630		8/28/2011	1.2		1.80		13.1	0.3	2.8	6.1	0.9	0.1
8/30/2011	0:00:19	17	1469914	207370	291717	4,202	670		9/2/2011	1.5		1.83		13.2	0.3	2.8	6.2	1.0	0.1
8/31/2011	0:00:06	22	1476940	210463	300172	4,226	602		9/2/2011	1.5		1.83		13.3	0.3	2.8	6.2	1.0	0.1
9/1/2011	0:00:19	16	1482256	214635	304428	4,250	721		9/2/2011	1.5		1.83		13.4	0.3	2.9	6.3	1.0	0.1
9/2/2011	0:00:18	14	1486481	220375	310793	4,274	619		9/2/2011	1.5		1.83		13.5	0.3	2.9	6.3	1.0	0.1
9/3/2011	0:00:16	19	1492412	225300	315582	4,298	745		9/2/2011	1.5		1.83		13.7	0.3	2.9	6.4	1.0	0.1
9/4/2011	0:00:27	24	1500338	229841	323696	4,322	736		9/2/2011	1.5		1.83		13.8	0.3	2.9	6.4	1.1	0.1
9/5/2011	0:00:25	24	1508678	235716	335503	4,346	607		9/2/2011	1.5		1.83		13.9	0.3	2.9	6.5	1.1	0.1
9/6/2011	0:00:22	24	1517400	239437	343143	4,370	641		9/2/2011	1.5		1.83		14.0	0.3	2.9	6.5	1.1	0.1
9/7/2011	0:01:11	17	1523033	242000	347804	4,394	685		9/2/2011	1.5		1.83		14.1	0.3	2.9	6.6	1.1	0.1
9/8/2011	0:00:14	16	1528522	244521	352567	4,418	629		9/14/2011	9.9		10.14		14.7	0.3	3.4	6.7	1.1	0.1
9/9/2011	0:00:12	16	1534008	247861	356594	4,442	681		9/14/2011	7.1		7.38		15.2	0.4	3.9	6.8	1.2	0.1
9/10/2011	0:00:17	14	1538873	251405	360300	4,466	746		9/14/2011	7.1		7.38		15.7	0.4	4.4	6.9	1.2	0.1
9/11/2011	0:00:16	24	1546961	257785	373027	4,490	771		9/14/2011	7.1		7.38		16.1	0.4	5.0	7.0	1.2	0.1
9/12/2011	0:00:14	18	1552870	261461	382712	4,514	657		9/14/2011	7.1		7.38		16.5	0.4	5.5	7.0	1.2	0.1
9/13/2011	0:00:25	15	1557138	264241	389677	4,538	471		9/16/2011	6.9		7.32		16.8	0.4	5.6	7.2	1.3	0.1
9/14/2011	0:00:04	8	1559752	265993	393546	4,562	521		9/16/2011	6.9		7.32		17.1	0.4	5.7	7.4	1.3	0.1
9/15/2011	0:00:29	17	1565065	269025	399745	4,586	510		9/20/2011	4.0		5.55		17.4	0.4	5.8	7.5	1.3	0.1
9/16/2011	0:00:14	17	1570613	270935	404178	4,610	526		9/20/2011	6.6		8.05		17.8	0.4	5.9	7.7	1.3	0.1
9/17/2011	0:00:26	18	1576919	272733	409611	4,634	527		9/20/2011	6.6		8.05		18.1	0.4	6.0	7.9	1.3	0.1
9/18/2011	0:00:21	20	1583436	277363	422422	4,658	511		9/20/2011	6.6		8.05		18.4	0.4	6.2	8.0	1.3	0.1
9/19/2011	0:00:18	16	1588421	281739	431032	4,682	398		9/22/2011	29.2		38.05		19.6	0.4	6.8	8.5	1.3	0.3
9/20/2011	0:00:16	14	1592564	285217	437500	4,706	338		9/22/2011	29.2		38.05		21.0	0.4	7.3	8.8	1.3	0.4
9/21/2011	0:00:01	16	1597649	289349	445401	4,730	409		9/22/2011	14.5		15.81		21.7	0.4	7.5	9.1	1.3	0.4
9/22/2011	0:00:19	20	1603869	294659	455041	4,754	481		9/22/2011	14.5		15.81		22.3	0.4	7.7	9.5	1.3	0.4
9/23/2011	0:00:25	20	1610381	300204	465206	4,778	441		9/28/2011	5.9		6.51		22.6	0.4	7.8	9.7	1.3	0.4
9/24/2011	0:01:02	17	1615990	304509	474367	4,802	486		9/28/2011	5.9		6.51		22.9	0.4	7.9	9.9	1.3	0.4
9/25/2011	0:00:16	23	1623932	309661	483594	4,826	485		9/28/2011	5.9		6.51		23.0	0.4	7.9	10.1	1.3	0.4
9/26/2011	0:00:14	9	1626699	313572	496493	4,850	269		9/28/2011	15.4		16.45		23.7	0.4	8.0	10.4	1.3	0.4
9/27/2011	0:00:12	19	1633230	315185	499438	4,874	443		9/28/2011	15.4		16.45		24.4	0.4	8.1	10.9	1.3	0.4
9/28/2011	0:00:23	10	1636957	318281	505121	4,898	524		10/3/2011	9.4		10.32		24.9	0.4	8.2	11.2	1.3	0.4
9/29/2011	0:00:08	22	1644171	324178	516457	4,922	522		10/3/2011	9.4		10.32		25.4	0.4	8.4	11.4	1.3	0.4
9/30/2011	0:00:06	17	1649871	326121	525145	4,946	540		10/3/2011	7.3		8.10		25.9	0.4	8.5	11.7	1.3	0.4
10/1/2011	0:01:09	18	1656218	329690	534949	4,970	646		10/3/2011	7.3		8.10		26.2	0.4	8.5	12.1	1.3	0.4
10/2/2011	0:00:55	20	1663828	334008	546160	4,994	405		10/3/2011	7.3		8.10		26.4	0.4	8.6	12.3	1.3	0.4
10/3/2011	0:00:52	24	1673355	338079	559348	5,018	335		10/3/2011	7.3		8.10		26.8	0.7	9.2	12.8	1.3	0.5
10/4/2011	0:00:50	18	1680486	341614	569937	5,042	463		10/3/2011	7.3		8.10		27.1	1.0	10.1	13.5	1.4	0.5
10/5/2011	0:00:48	12	1685093	343922	576177	5,066	495		10/10/2011	6.0		7.17		27.3	1.0	10.2	13.7	1.4	0.5
10/6/2011	0:01:00	13	1689793	346178	582656	5,090	271		10/10/2011	7.3		8.10		27.5	1.0	10.2	13.8	1.4	0.5
10/7/2011	0:00:44	2	1690645	346629	583924	5,114	211		10/11/2011	20.9		22.54		28.2	1.0	10.3	14.1	1.4	0.5
10/8/2011	0:00:14	12	1694709	348720	589901	5,138	382		10/11/2011	20.9		22.54		29.4	1.0	10.5	14.7	1.4	0.5
10/9/2011	0:00:12	24	1704222	353424	603254	5,162	591		10/11/2011	20.9		22.54		30.3	1.0	10.7	15.5	1.4	0.5
10/10/2011	0:00:10	18	1711305	356877	612918	5,186	441		10/11/2011	20.9		22.54		31.0	1.0	10.9	16.2	1.4	0.5

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
10/11/2011	0:00:15	10	1715397	358968	618681	5,210	341		10/11/2011	20.9		22.54		32.0	1.0	11.0	16.7	1.4	0.5
10/12/2011	0:00:13	13	1720561	361443	625760	5,234	488		10/11/2011	20.9		22.54		33.0	1.0	11.1	16.9	1.4	0.5
10/13/2011	0:00:11	18	1727909	364878	635761	5,258	508		10/11/2011	20.9		22.54		33.7	1.0	11.1	17.1	1.4	0.5
10/13/2011	23:59:55	11	1732223	366953	641512	5,282	333		10/11/2011	20.9		22.54		34.5	1.0	11.2	17.2	1.4	0.5
10/15/2011	0:00:59	21	1740052	370140	649554	5,306	387		10/11/2011	20.9		22.54		35.2	1.0	11.2	17.3	1.4	0.6
10/16/2011	0:00:43	18	1747197	373475	658743	5,330	360		10/11/2011	20.9		22.54		36.0	1.0	11.2	17.4	1.4	0.6
10/17/2011	0:00:28	24	1754762	377403	668877	5,354	412		10/17/2011	13.2		20.24		36.8	1.0	11.4	17.7	1.4	0.6
10/18/2011	0:00:26	24	1764530	379733	674998	5,378	410		10/17/2011	13.2		20.24		37.6	1.1	11.5	18.0	1.4	0.6
10/19/2011	0:00:25	16	1770654	381702	681919	5,402	426		10/19/2011	2.2		3.06		37.7	1.1	11.5	18.0	1.4	0.6
10/20/2011	0:00:10	24	1779947	384952	691112	5,426	505		10/19/2011	2.2		3.06		37.9	1.1	11.6	18.1	1.4	0.6
10/21/2011	0:00:07	16	1785408	387878	698073	5,450	551		10/21/2011	23.0		24.32		38.9	1.1	12.0	18.8	1.4	0.6
10/22/2011	0:00:57	17	1790939	390356	703918	5,474	456		10/21/2011	23.0		24.32		39.5	1.1	12.4	19.4	1.4	0.6
10/23/2011	0:00:42	9	1794479	392194	708552	5,498	312		10/21/2011	23.0		24.32		40.6	1.1	12.6	19.7	1.4	0.6
10/24/2011	0:00:40	0	1794479	392194	708552	5,522	499		10/24/2011	9.6		10.73		41.1	1.1	12.7	20.1	1.4	0.6
10/25/2011	0:00:03	10	1795410	393917	712730	5,546	533		10/24/2011	9.6		10.73		41.5	1.1	12.8	20.4	1.4	0.6
10/26/2011	0:00:06	17	1797153	397123	720372	5,570	352		10/26/2011	18.2		24.61		42.3	1.2	13.2	20.6	1.4	0.6
10/27/2011	0:00:08	24	1799667	401484	731612	5,594	362		10/26/2011	18.2		24.61		43.1	1.2	13.7	20.8	1.4	0.6
10/28/2011	0:00:06	18	1801532	404955	740301	5,618	350		10/28/2011	11.4		18.57		43.6	1.2	13.7	21.0	1.4	0.6
10/29/2011	0:00:44	6	1803370	408290	748893	5,642	343		10/28/2011	11.4		18.57		44.2	1.2	13.8	21.3	1.4	0.6
10/30/2011	0:00:41	16	1804154	409756	752607	5,666	331		10/31/2011	3.2		5.7		44.4	1.2	13.9	21.6	1.4	0.6
10/31/2011	0:00:39	24	1807199	414399	765021	5,690	345		10/31/2011	3.2		5.7		44.5	1.2	13.9	21.6	1.4	0.6
11/1/2011	0:00:04	18	1809953	417419	773537	5,714	344		10/31/2011	3.2		5.7		44.7	1.2	14.0	21.7	1.4	0.7
11/2/2011	0:00:08	11	1811271	419089	777826	5,738	346		11/2/2011	2.4		3.3		44.8	1.2	14.0	21.7	1.4	0.7
11/3/2011	0:59:56	14	1813301	421238	782875	5,762	410		11/2/2011	2.4		3.3		44.9	1.2	14.0	21.8	1.4	0.7
11/4/2011	0:59:55	7	1814229	422557	786421	5,786	417		11/4/2011	1.0		1.5		45.0	1.2	14.0	21.8	1.4	0.7
11/5/2011	0:00:42	17	1815628	423865	792093	5,810	430		11/4/2011	1.0		1.5		45.1	1.2	14.0	21.8	1.4	0.7
11/6/2011	0:00:40	24	1815726	423865	798291	5,834	419		11/4/2011	1.0		1.5		45.1	1.2	14.0	21.9	1.4	0.7
11/7/2011	0:00:28	19	1815726	424248	803569	5,858	525		11/4/2011	1.0		1.5		45.2	1.2	14.1	21.9	1.4	0.7
11/8/2011	0:00:26	21	1815726	424914	809318	5,882	586		11/4/2011	1.0		1.5		45.3	1.2	14.1	21.9	1.4	0.7
11/9/2011	0:00:10	17	1815726	424914	812833	5,906	630		11/9/2011	11.1		13.0		46.0	1.2	14.3	22.3	1.4	0.7
11/10/2011	0:00:11	18	1815726	424914	816224	5,930	555		11/9/2011	11.1		13.0		46.5	1.2	14.5	22.7	1.4	0.7
11/11/2011	0:00:09	18	1815726	424914	819897	5,954	467		11/11/2011	2.0		2.4		46.6	1.2	14.5	22.8	1.4	0.7
11/12/2011	0:00:45	17	1815726	424914	824424	5,978	597		11/11/2011	2.0		2.4		46.7	1.2	14.6	22.8	1.4	0.7
11/13/2011	0:00:06	23	1815726	424914	832171	6,002	454		11/11/2011	2.0		2.4		46.9	1.2	14.6	22.9	1.4	0.7
11/14/2011	0:00:03	24	1815954	424914	840172	6,026	594		11/14/2011	4.4		6.0		47.3	1.2	14.7	23.0	1.4	0.7
11/15/2011	0:00:14	9	1815954	424914	842495	6,050	778		11/14/2011	4.4		6.0		47.7	1.2	14.7	23.2	1.4	0.8
11/15/2011	23:59:47	19	1815954	424914	848174	6,074	744		11/14/2011	4.4		6.0		48.0	1.2	14.8	23.3	1.4	0.8
11/16/2011	23:59:45	17	1815954	424914	853596	6,098	603		11/16/2011	2.7		3.6		48.2	1.2	14.9	23.4	1.4	0.8
11/17/2011	23:59:44	15	1815954	424914	858005	6,122	589		11/18/2011	1.7		2.2		48.3	1.2	14.9	23.4	1.4	0.8
11/19/2011	0:00:21	21	1815954	424914	865380	6,146	481		11/18/2011	1.7		2.2		48.4	1.2	15.0	23.5	1.4	0.8
11/20/2011	0:00:19	24	1815954	424914	873886	6,170	523		11/18/2011	1.7		2.2		48.5	1.2	15.0	23.5	1.4	0.8
11/21/2011	0:00:17	16	1815954	424914	882480	6,194	539		11/21/2011	1.6		2.4		48.6	1.2	15.0	23.6	1.4	0.8
11/22/2011	0:00:03	15	1815954	424914	887601	6,218	498		11/21/2011	1.6		2.4		48.7	1.2	15.1	23.6	1.4	0.8
11/23/2011	0:00:01	10	1815954	424914	890912	6,242	517		11/23/2011	3.7		6.3		49.1	1.3	15.1	23.7	1.4	0.8
11/23/2011	23:59:59	24	1815954	424914	899675	6,266	618		11/23/2011	3.7		6.3		49.4	1.3	15.2	23.8	1.4	0.8
11/24/2011	23:59:43	24	1815954	424914	908494	6,290	550		11/23/2011	3.7		6.3		49.7	1.3	15.3	23.9	1.4	0.8
11/26/2011	0:00:32	24	1815954	424914	917327	6,314	481		11/23/2011	3.7		6.3		49.9	1.3	15.4	24.0	1.4	0.8
11/27/2011	0:00:30	24	1815954	424914	926172	6,338	495		11/23/2011	3.7		6.3		50.2	1.3	15.4	24.1	1.4	0.8
11/28/2011	0:00:15	24	1815954	424914	934903	6,362	489		11/23/2011	3.7		6.3		50.5	1.3	15.5	24.2	1.4	0.8
11/29/2011	0:00:13	16	1815954	424914	939180	6,386	567		11/29/2011	1.6		2.3		50.7	1.3	15.5	24.2	1.4	0.8
11/30/2011	0:00:11	15	1815954	424914	942532	6,410	566		11/30/2011	6.9		9.2		51.2	1.3	15.7	24.4	1.5	0.8
11/30/2011	23:59:56	17	1815954	424914	946225	6,434	617		11/30/2011	6.9		9.2		51.6	1.3	15.9	24.5	1.5	0.8
12/1/2011	23:59:54	16	1815954	424914	950495	6,458	592		11/30/2011	6.9		9.2		52.1	1.3	16.1	24.7	1.5	0.8
12/3/2011	0:00:31	16	1815954	424914	955515	6,482	565		11/30/2011	6.9		9.2		52.7	1.3	16.3	24.9	1.5	0.8
12/4/2011	0:00:29	24	1815954	424914	963008	6,506	665		11/30/2011	6.9		9.2		53.2	1.3	16.5	25.0	1.5	0.8

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
12/5/2011	0:00:27	24	1815954	424914	969869	6,530	643		11/30/2011	6.9		9.2		53.7	1.3	16.8	25.2	1.5	0.8
12/6/2011	0:00:24	15	1815954	424914	974155	6,554	675		11/30/2011	6.9		9.2		54.3	1.3	17.0	25.4	1.5	0.8
12/7/2011	0:00:11	18	1815954	424914	979220	6,578	705		12/7/2011	4.9		6.6		54.7	1.3	17.2	25.4	1.5	0.9
12/8/2011	0:00:10	21	1815954	424914	985707	6,602	716		12/7/2011	4.9		6.6		55.2	1.3	17.5	25.5	1.5	0.9
12/8/2011	23:59:57	17	1815954	424914	991963	6,626	704		12/9/2011	1.8		2.4		55.3	1.3	17.5	25.6	1.5	0.9
12/10/2011	0:00:49	16	1815954	424914	998452	6,650	665		12/9/2011	1.8		2.4		55.4	1.3	17.6	25.6	1.5	0.9
12/11/2011	0:00:47	24	1815954	424914	1008689	6,674	592		12/9/2011	1.8		2.4		55.5	1.3	17.6	25.7	1.5	0.9
12/12/2011	0:00:32	24	1815954	424914	1018639	6,698	526		12/9/2011	1.8		2.4		55.6	1.3	17.6	25.7	1.5	0.9
12/13/2011	0:00:10	16	1815954	424914	1023568	6,722	470		12/9/2011	1.8		2.4		55.8	1.3	17.7	25.7	1.5	0.9
12/13/2011	23:59:54	17	1815954	424921	1029546	6,746	558		12/13/2011	0.5		0.8		55.8	1.3	17.7	25.7	1.5	0.9
12/14/2011	23:59:52	15	1815954	424921	1035583	6,770	693		12/14/2011	1.3		1.9		55.9	1.3	17.7	25.8	1.5	0.9
12/15/2011	23:59:50	17	1815954	424922	1041676	6,794	743		12/16/2011	0.9		1.3		56.0	1.3	17.8	25.8	1.5	0.9
12/17/2011	0:00:40	16	1815954	424930	1047456	6,818	722		12/16/2011	0.9		1.3		56.1	1.3	17.8	25.8	1.5	0.9
12/18/2011	0:00:25	24	1815954	424930	1056835	6,842	706		12/16/2011	0.9		1.3		56.2	1.3	17.8	25.9	1.5	0.9
12/19/2011	0:00:23	24	1815954	424935	1066187	6,866	710		12/19/2011	0.7		0.9		56.2	1.3	17.8	25.9	1.5	0.9
12/20/2011	0:00:11	16	1815954	424935	1072379	6,890	692		12/19/2011	0.7		0.9		56.3	1.3	17.9	25.9	1.5	0.9
12/21/2011	0:00:10	20	1815954	424947	1080902	6,914	624		12/21/2011	1.6		2.2		56.4	1.4	17.9	26.0	1.5	0.9
12/22/2011	0:00:09	16	1815954	424947	1086934	6,938	746		12/21/2011	1.6		2.2		56.6	1.4	17.9	26.0	1.5	0.9
12/22/2011	23:59:54	18	1815954	424947	1092884	6,962	745		12/21/2011	1.6		2.2		56.7	1.4	18.0	26.1	1.5	0.9
12/24/2011	0:00:43	20.5	1815954	424947	1100831	6,986	545		12/21/2011	1.6		2.2		56.8	1.4	18.0	26.1	1.5	0.9
12/25/2011	0:00:41	24	1815954	424947	1109621	7,010	589		12/21/2011	1.6		2.2		56.9	1.4	18.1	26.2	1.5	0.9
12/26/2011	0:00:27	24	1815954	424947	1118594	7,034	555		12/21/2011	1.6		2.2		57.1	1.4	18.1	26.2	1.5	0.9
12/27/2011	0:00:24	24	1815954	424947	1127572	7,058	574		12/27/2011	1.8		2.6		57.2	1.4	18.1	26.3	1.5	0.9
12/28/2011	0:00:09	24	1815954	424947	1136594	7,082	536		12/28/2011	1.1		1.5		57.3	1.4	18.2	26.3	1.5	0.9
12/29/2011	0:00:07	24	1815954	424947	1145777	7,106	533		12/28/2011	1.1		1.5		57.3	1.4	18.2	26.3	1.5	0.9
12/30/2011	0:00:05	24	1815954	424947	1155113	7,130	547		12/28/2011	1.1		1.5		57.4	1.4	18.2	26.4	1.5	0.9
12/31/2011	0:00:55	24	1815954	424947	1163446	7,154	565		12/28/2011	1.1		1.5		57.5	1.4	18.2	26.4	1.5	0.9
1/1/2012	0:00:41	24	1815954	424947	1172647	7,178	587		12/28/2011	1.1		1.5		57.6	1.4	18.2	26.4	1.5	0.9
1/2/2012	0:00:39	24	1815954	424947	1181962	7,202	595		12/28/2011	1.1		1.5		57.7	1.4	18.3	26.5	1.5	0.9
1/3/2012	0:00:23	24	1815954	424947	1191135	7,226	603		1/3/2012	0.7		0.9		57.7	1.4	18.3	26.5	1.5	0.9
1/4/2012	0:00:21	16	1815954	424947	1196780	7,250	587		1/4/2012	1.0		1.2		57.8	1.4	18.3	26.5	1.5	0.9
1/5/2012	0:00:11	16	1815954	424947	1202235	7,274	574		1/4/2012	1.0		1.2		57.8	1.4	18.3	26.6	1.5	0.9
1/6/2012	1:00:00	17	1815954	424947	1208421	7,298	529		1/6/2012	1.6		2.1		57.9	1.4	18.3	26.6	1.5	0.9
1/7/2012	0:00:08	18	1815954	424947	1213705	7,322	479		1/6/2012	1.6		2.1		58.0	1.4	18.3	26.7	1.5	0.9
1/8/2012	0:00:02	24	1815954	424947	1222466	7,346	429		1/6/2012	1.6		2.1		58.1	1.4	18.3	26.7	1.5	0.9
1/9/2012	0:00:00	24	1815958	424947	1231255	7,370	343		1/6/2012	1.6		2.1		58.1	1.4	18.4	26.7	1.5	0.9
1/9/2012	23:59:58	16	1815958	424947	1236760	7,394	453		1/9/2012	1.1		1.7		58.2	1.4	18.4	26.8	1.5	0.9
1/11/2012	0:00:12	16	1816001	424947	1242397	7,418	531		1/11/2012	1.1		2.2		58.3	1.4	18.4	26.8	1.5	0.9
1/12/2012	0:00:06	14	1816100	424947	1246929	7,442	539		1/11/2012	1.1		2.2		58.4	1.4	18.4	26.8	1.5	0.9
1/13/2012	0:00:04	16	1816609	424947	1252221	7,466	528		1/13/2012	0.8		1.3		58.5	1.4	18.4	26.8	1.5	0.9
1/14/2012	0:00:40	8	1819216	424962	1255253	7,490	330		1/13/2012	0.8		1.3		58.5	1.4	18.4	26.9	1.5	0.9
1/15/2012	0:00:39	0	1828075	425003	1255253	7,514	330		1/13/2012	0.8		1.3		58.6	1.4	18.4	26.9	1.5	0.9
1/16/2012	0:00:49	24(1) 0(3)	1836939	425003	1255375	7,538	330		1/16/2012	0.3		0.5		58.6	1.4	18.4	26.9	1.5	0.9
1/17/2012	0:00:47	17(1) 0(3)	1843056	425003	1255413	7,562	330		1/16/2012	0.3		0.5		58.6	1.4	18.5	26.9	1.5	0.9
1/18/2012	0:00:32	16(1) 5(3)	1849222	425009	1256995	7,586	330		1/16/2012	0.3		0.5		58.6	1.4	18.5	26.9	1.5	0.9
1/19/2012	0:00:33	16(1) 4(3)	1854791	425009	1258102	7,610	451		1/19/2012	0.7		1.2		58.6	1.4	18.5	26.9	1.5	0.9
1/20/2012	0:00:30	16(1) 13(3)	1860724	425009	1262412	7,634	334		1/20/2012	6.6		7.8		58.9	1.4	18.5	27.1	1.5	0.9
1/21/2012	0:00:15	23(1) 13(3)	1869031	425917	1266632	7,658	361		1/20/2012	6.6		7.8		59.1	1.4	18.6	27.2	1.5	0.9
1/22/2012	0:01:13	24(1) 24(3)	1877762	427737	1275051	7,682	379		1/20/2012	6.6		7.8		59.4	1.4	18.6	27.4	1.5	0.9
1/23/2012	0:01:10	24	1886516	429418	1283475	7,706	380		1/23/2012	1.9		2.2		59.5	1.4	18.6	27.4	1.5	0.9
1/24/2012	0:01:08	24	1895353	429774	1291889	7,730	406		1/23/2012	1.9		2.2		59.6	1.4	18.7	27.5	1.5	0.9
1/25/2012	0:01:06	16	1901226	430447	1297477	7,754	462		1/25/2012	0.4		0.5		59.6	1.4	18.7	27.5	1.5	0.9
1/26/2012	0:00:50	2	1909248	431219	1305157	7,778	532		1/25/2012	0.4		0.5		59.6	1.4	18.7	27.5	1.5	0.9
1/27/2012	0:00:48	18	1915986	431852	1311609	7,802	490		1/27/2012	4.8		11.8		60.1	1.4	18.8	27.5	1.5	0.9
1/28/2012	0:00:51	18	1922894	432513	1318143	7,826	455		1/27/2012	4.8		11.8		60.6	1.4	19.0	27.6	1.5	0.9

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
1/29/2012	0:00:49	24	1932204	433582	1325525	7,850	429		1/27/2012	4.8		11.8		61.0	1.4	19.1	27.6	1.5	1.0
1/30/2012	0:01:34	24	1941673	434772	1334125	7,874	419		1/30/2012	8.0		17.1		61.7	1.4	19.4	27.7	1.5	1.0
1/31/2012	0:00:54	22	1950303	435866	1340925	7,898	442		1/30/2012	8.0		17.1		62.6	1.4	19.7	27.7	1.5	1.0
2/1/2012	0:01:31	21	1958099	436722	1347877	7,922	557		2/1/2012	24.5		28.2		64.0	1.4	19.8	28.7	1.5	1.0
2/2/2012	0:01:41	24	1967339	438748	1355026	7,946	557		2/1/2012	24.5		28.2		65.4	1.4	20.0	29.8	1.6	1.0
2/3/2012	0:01:26	20	1975071	440443	1361535	7,970	566		2/3/2012	2.5		3.1		65.6	1.4	20.0	29.9	1.6	1.0
2/4/2012	0:01:48	23	1984120	442424	1369524	7,994	541		2/3/2012	2.5		3.1		65.7	1.4	20.0	30.0	1.6	1.0
2/5/2012	0:01:49	24	1993541	444619	1377707	8,018	505		2/3/2012	2.5		3.1		65.8	1.4	20.0	30.1	1.6	1.0
2/6/2012	0:01:35	24	2002984	446966	1384734	8,042	499		2/6/2012	0.7		1.0		65.9	1.4	20.1	30.1	1.6	1.0
2/7/2012	0:00:20	24	2012436	449290	1392716	8,066	485		2/6/2012	0.7		1.0		65.9	1.4	20.1	30.1	1.6	1.0
2/8/2012	0:00:18	17	2017818	449885	1397958	8,090	372		2/8/2012	1.6		2.2		66.0	1.4	20.1	30.2	1.6	1.0
2/9/2012	0:00:10	23	2023683	451564	1404490	8,114	425		2/8/2012	1.6		2.2		66.1	1.4	20.1	30.2	1.6	1.0
2/10/2012	0:00:21	23	2029847	453273	1410690	8,138	427		2/10/2012	4.6		7.0		66.4	1.4	20.1	30.4	1.6	1.0
2/11/2012	0:00:59	20	2035418	455003	1416672	8,162	491		2/10/2012	4.6		7.0		66.7	1.4	20.1	30.5	1.6	1.0
2/12/2012	0:00:57	24	2043023	457199	1425030	8,186	536		2/10/2012	4.6		7.0		67.0	1.4	20.2	30.7	1.6	1.0
2/13/2012	0:00:42	24	2051965	458305	1433643	8,210	429		2/13/2012	4.1		8.6		67.3	1.4	20.2	30.9	1.6	1.0
2/14/2012	0:00:39	23	2060822	458477	1442011	8,234	337		2/13/2012	4.1		8.6		67.5	1.4	20.2	31.0	1.6	1.0
2/15/2012	0:00:37	16	2067052	458981	1447510	8,258	370		2/15/2012	6.2		9.6		67.8	1.4	20.2	31.1	1.6	1.0
2/16/2012	0:00:48	20	2074994	459844	1451717	8,282	355		2/15/2012	6.2		9.6		68.3	1.4	20.3	31.3	1.6	1.0
2/17/2012	0:00:32	17	2081634	461009	1457752	8,306	483		2/17/2012	0.4		0.7		68.3	1.4	20.3	31.3	1.6	1.0
2/18/2012	0:01:22	24	2091330	462989	1465980	8,330	533		2/17/2012	0.4		0.7		68.3	1.4	20.3	31.3	1.6	1.0
2/19/2012	0:01:20	24	2101032	464691	1473929	8,354	524		2/17/2012	0.4		0.7		68.4	1.4	20.3	31.3	1.6	1.0
2/20/2012	0:01:18	24	2110729	466084	1482249	8,378	517		2/20/2012	0.6		1.0		68.4	1.4	20.3	31.3	1.6	1.0
2/21/2012	0:01:10	24	2120366	467486	1490948	8,402	538		2/20/2012	0.6		1.0		68.5	1.5	20.3	31.4	1.6	1.0
2/22/2012	0:01:01	18	2127129	468477	1496745	8,426	534		2/22/2012	1.4		1.9		68.5	1.5	20.3	31.4	1.6	1.0
2/23/2012	0:00:58	24	2136717	469884	1505278	8,450	467		2/22/2012	1.4		1.9		68.6	1.5	20.3	31.5	1.6	1.0
2/24/2012	0:00:56	24	2146293	471194	1513492	8,474	413		2/24/2012	0.2		0.4		68.6	1.5	20.3	31.5	1.6	1.0
2/25/2012	0:01:46	22	2154847	472141	1520211	8,498	397		2/24/2012	0.2		0.4		68.6	1.5	20.3	31.5	1.6	1.0
2/26/2012	0:01:44	24	2164391	473190	1528310	8,522	460		2/24/2012	0.2		0.4		68.7	1.5	20.3	31.5	1.6	1.0
2/27/2012	0:01:42	24	2173924	474239	1536553	8,546	455		2/24/2012	0.2		0.4		68.7	1.5	20.3	31.5	1.6	1.0
2/28/2012	0:01:39	20	2181141	475054	1542734	8,570	444		2/24/2012	0.2		0.4		68.7	1.5	20.3	31.5	1.6	1.0
2/29/2012	0:00:14	19	2188389	475894	1548309	8,594	484		2/24/2012	0.2		0.4		68.7	1.5	20.3	31.5	1.6	1.0
3/1/2012	0:00:24	24	2197445	476942	1556009	8,618	453		3/1/2012	3.0		4.1		68.8	1.5	20.4	31.6	1.6	1.0
3/1/2012	23:59:56	20	2204696	477759	1561731	8,642	295		3/1/2012	3.0		4.1		69.0	1.5	20.4	31.6	1.6	1.0
3/3/2012	0:00:05	19	2211896	478628	1567919	8,666	407		3/2/2012	0.5		0.8		69.0	1.5	20.4	31.6	1.6	1.0
3/4/2012	0:00:03	24	2221110	479680	1573510	8,690	226		3/2/2012	0.5		0.8		69.0	1.5	20.4	31.6	1.6	1.0
3/5/2012	0:00:11	24	2230407	479686	1573525	8,714	200		3/2/2012	0.5		0.8		69.0	1.5	20.4	31.6	1.6	1.0
3/6/2012	0:00:16	16	2236281	479686	1573690	8,738	287		3/2/2012	0.5		0.8		69.0	1.5	20.4	31.6	1.6	1.0
3/7/2012	0:00:14	24	2245545	479977	1575564	8,762	444		3/7/2012	2.0		2.6		69.1	1.5	20.4	31.7	1.6	1.0
3/7/2012	23:59:58	17	2251931	480706	1579997	8,786	482		3/7/2012	2.0		2.6		69.3	1.5	20.4	31.8	1.6	1.0
3/9/2012	0:00:22	18	2258645	481478	1586026	8,810	527		3/8/2012	2.6		3.3		69.4	1.5	20.4	31.9	1.6	1.0
3/10/2012	0:00:48	24	2267875	482508	1594617	8,834	527		3/9/2012	2.4		2.9		69.6	1.5	20.4	32.0	1.6	1.0
3/11/2012	0:00:58	23	2276820	483526	1603314	8,858	533		3/9/2012	2.4		2.9		69.7	1.5	20.5	32.1	1.6	1.0
3/12/2012	0:00:39	24	2285775	484531	1611851	8,882	532		3/12/2012	2.2		2.7		69.8	1.5	20.5	32.1	1.6	1.0
3/13/2012	0:00:37	16	2292183	484995	1615653	8,906	466		3/12/2012	2.2		2.7		69.9	1.5	20.5	32.2	1.6	1.0
3/14/2012	0:00:35	17	2298725	485311	1618396	8,930	450		3/12/2012	2.2		2.7		70.1	1.5	20.5	32.3	1.6	1.0
3/15/2012	0:00:32	24	2308156	486358	1627225	8,954	516		3/15/2012	2.4		2.8		70.2	1.5	20.5	32.4	1.6	1.0
3/16/2012	0:00:24	18	2315114	487087	1633661	8,978	463		3/16/2012	2.8		3.3		70.3	1.5	20.5	32.5	1.6	1.0
3/17/2012	0:01:16	21	2323386	487569	1639951	9,002	464		3/16/2012	2.8		3.3		70.4	1.5	20.6	32.6	1.6	1.0
3/18/2012	0:01:00	24	2332882	488849	1646450	9,026	439		3/16/2012	2.8		3.3		70.6	1.5	20.6	32.6	1.6	1.0
3/19/2012	0:00:58	24	2342387	490218	1653018	9,050	433		3/16/2012	2.8		3.3		70.6	1.5	20.6	32.7	1.6	1.0
3/20/2012	0:00:43	24	2350098	490237	1653125	9,074	153		3/16/2012	2.8		3.3		70.7	1.5	20.6	32.8	1.6	1.0
3/21/2012	0:00:40	18	2354619	490683	1655731	9,098	237		3/21/2012	1.5		1.8		70.7	1.5	20.6	32.8	1.6	1.0
3/22/2012	0:00:51	24	2364142	491958	1663632	9,122	392		3/22/2012	1.1		1.3		70.8	1.5	20.6	32.8	1.6	1.0
3/23/2012	0:00:36	24	2373648	493243	1672254	9,146	487		3/23/2012	0.9		1.1		70.9	1.5	20.6	32.8	1.6	1.0

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
3/24/2012	0:01:13	18	2380347	494097	1678604	9,170	489		3/23/2012	0.9		1.1		70.9	1.5	20.6	32.9	1.6	1.0
3/25/2012	0:01:11	24	2389526	495416	1687352	9,194	488		3/23/2012	0.9		1.1		70.9	1.5	20.6	32.9	1.6	1.0
3/26/2012	0:01:22	24	2398922	497264	1696514	9,218	450		3/26/2012	1.3		1.6		71.0	1.5	20.6	32.9	1.6	1.0
3/27/2012	0:01:06	24	2408288	499149	1705871	9,242	362		3/26/2012	1.3		1.6		71.0	1.5	20.7	32.9	1.6	1.0
3/28/2012	0:01:04	16	2413471	500421	1711290	9,266	273		3/28/2012	2.4		8.6		71.3	1.5	20.7	33.0	1.6	1.1
3/29/2012	0:01:15	8	2416440	501101	1714105	9,290	350		3/28/2012	2.4		8.6		71.7	1.5	20.7	33.0	1.6	1.2
3/30/2012	0:00:59	24	2425805	503357	1723542	9,314	493		3/30/2012	1.3		2.3		71.8	1.5	20.7	33.1	1.6	1.2
3/31/2012	0:01:50	12	2429697	504139	1726501	9,338	383		3/30/2012	1.3		2.3		71.8	1.5	20.7	33.1	1.6	1.2
4/1/2012	0:01:47	13	2434279	505245	1729787	9,362	325		3/30/2012	1.3		2.3		71.9	1.5	20.7	33.1	1.6	1.3
4/2/2012	0:01:45	12	2439056	506385	1733207	9,386	320		4/2/2012	1.2		1.5		72.0	1.5	20.7	33.2	1.6	1.3
4/3/2012	0:01:46	14	2444176	507549	1736548	9,410	478		4/2/2012	1.2		1.5		72.0	1.5	20.7	33.2	1.6	1.3
4/4/2012	0:01:31	14	2449664	508555	1739699	9,434	440		4/2/2012	1.2		1.5		72.1	1.5	20.7	33.3	1.6	1.3
4/5/2012	0:01:28	14	2454609	509537	1742826	9,458	414		4/2/2012	1.2		1.5		72.1	1.5	20.8	33.3	1.6	1.3
4/6/2012	0:01:26	16	2460564	510897	1746856	9,482	426		4/6/2012	0.9		1.1		72.2	1.5	20.8	33.3	1.6	1.3
4/7/2012	0:02:03	21	2467975	512758	1752665	9,506	370		4/6/2012	0.9		1.1		72.2	1.5	20.8	33.3	1.6	1.3
4/8/2012	0:02:14	24	2476723	514844	1759296	9,530	403		4/6/2012	0.9		1.1		72.3	1.5	20.8	33.4	1.6	1.3
4/9/2012	0:01:59	24	2486054	516837	1766830	9,554	581		4/9/2012	0.7		0.9		72.3	1.5	20.8	33.4	1.6	1.3
4/10/2012	0:01:56	17	2492259	518061	1771705	9,578	591		4/9/2012	0.7		0.9		72.4	1.5	20.8	33.4	1.6	1.3
4/11/2012	0:01:54	24	2501622	520156	1779769	9,602	619		4/11/2012	0.9		1.2		72.4	1.5	20.8	33.5	1.6	1.3
4/12/2012	0:00:10	17	2507964	521695	1785303	9,626	609		4/11/2012	0.9		1.2		72.5	1.5	20.8	33.5	1.6	1.3
4/13/2012	0:00:08	18	2514574	523337	1790938	9,650	622		4/13/2012	0.7		0.9		72.6	1.5	20.8	33.6	1.6	1.3
4/14/2012	0:00:59	24	2523945	526117	1799147	9,674	613		4/13/2012	0.7		0.9		72.6	1.5	20.8	33.6	1.6	1.3
4/15/2012	0:00:56	24	2533540	529293	1807204	9,698	577		4/13/2012	0.7		0.9		72.6	1.5	20.8	33.6	1.6	1.3
4/16/2012	0:00:41	24	2543248	532590	1814640	9,722	567		4/16/2012	1.6		1.9		72.7	1.5	20.8	33.7	1.6	1.3
4/17/2012	0:00:39	19	2550589	535074	1819974	9,746	588		4/16/2012	1.6		1.9		72.8	1.5	20.8	33.8	1.6	1.3
4/18/2012	0:00:36	18	2557391	537463	1825012	9,770	581		4/18/2012	1.5		1.8		72.9	1.5	20.8	33.8	1.6	1.3
4/19/2012	0:00:34	24	2566726	540547	1832031	9,794	549		4/18/2012	1.5		1.8		73.0	1.5	20.8	33.9	1.6	1.3
4/20/2012	0:00:32	19	2574132	542790	1837356	9,818	533		4/20/2012	2.4		2.7		73.1	1.5	20.9	34.0	1.6	1.3
4/21/2012	0:01:22	23	2583639	545520	1844458	9,842	497		4/20/2012	2.4		2.7		73.3	1.5	20.9	34.1	1.6	1.3
4/22/2012	0:01:19	21	2592103	548045	1850732	9,866	480		4/20/2012	2.4		2.7		73.4	1.5	20.9	34.2	1.6	1.3
4/23/2012	0:01:17	24	2602069	551052	1858092	9,890	529		4/23/2012	1.0		1.3		73.5	1.5	20.9	34.2	1.6	1.3
4/24/2012	0:01:02	24	2612019	554040	1865376	9,914	574		4/23/2012	1.0		1.3		73.5	1.5	20.9	34.3	1.6	1.3
4/25/2012	0:00:08	15	2617653	555556	1869492	9,938	590		4/25/2012	6.3		6.9		73.9	1.6	20.9	34.6	1.6	1.3
4/26/2012	0:00:18	24	2627593	558541	1876755	9,962	617		4/25/2012	6.3		6.9		74.3	1.6	20.9	34.9	1.6	1.3
4/27/2012	0:00:16	21	2635461	560577	1882422	9,986	608		4/27/2012	1.9		2.2		74.4	1.6	21.0	35.0	1.6	1.3
4/28/2012	0:00:01	18	2642837	562439	1887609	10,010	589		4/27/2012	1.9		2.2		74.5	1.6	21.0	35.1	1.6	1.3
4/29/2012	0:00:11	24	2653046	565431	1894859	10,034	556		4/27/2012	1.9		2.2		74.6	1.6	21.0	35.1	1.6	1.3
4/29/2012	23:59:56	23	2662714	568256	1901501	10,058	508		4/27/2012	1.9		2.2		74.7	1.6	21.0	35.2	1.6	1.3
4/30/2012	23:59:54	19	2670686	570494	1906783	10,082	525		4/30/2012	1.1		1.3		74.8	1.6	21.0	35.2	1.6	1.3
5/2/2012	0:00:44	20	2679473	572930	1912406	10,106	572		5/2/2012	1.5		2.5		74.9	1.6	21.0	35.3	1.6	1.3
5/3/2012	0:00:42	24	2690215	575798	1919192	10,130	584		5/2/2012	1.5		2.5		75.0	1.6	21.0	35.4	1.6	1.3
5/4/2012	0:00:40	18	2697817	577764	1923920	10,154	586		5/4/2012	5.5		8.5		75.5	1.6	21.0	35.6	1.6	1.3
5/5/2012	0:00:37	23	2707889	580327	1930077	10,178	590		5/4/2012	5.5		8.5		75.9	1.6	21.0	35.9	1.6	1.4
5/6/2012	0:00:35	24	2718636	583081	1936861	10,202	583		5/4/2012	5.5		8.5		76.4	1.6	21.1	36.2	1.6	1.4
5/7/2012	0:00:33	24	2729337	585181	1943162	10,226	564		5/7/2012	3.3		3.8		76.6	1.6	21.1	36.3	1.6	1.4
5/8/2012	0:00:30	24	2740081	586981	1948389	10,250	569		5/7/2012	3.3		3.8		76.7	1.6	21.1	36.5	1.6	1.4
5/9/2012	0:01:21	18	2748120	588050	1952493	10,274	488		5/9/2012	3.1		3.9		76.9	1.6	21.1	36.6	1.6	1.4
5/10/2012	0:01:05	22	2757750	589869	1957469	10,298	499		5/9/2012	3.1		3.9		77.1	1.6	21.1	36.7	1.6	1.4
5/11/2012	0:01:16	19	2765081	591152	1960697	10,322	522		5/11/2012	4.5		4.8		77.3	1.6	21.1	36.9	1.6	1.4
5/12/2012	0:01:01	22	2773768	592573	1964498	10,346	457		5/11/2012	4.5		4.8		77.4	1.6	21.1	37.1	1.6	1.4
5/13/2012	0:01:11	14	2779416	593108	1965808	10,370	372		5/11/2012	4.5		4.8		77.5	1.6	21.1	37.2	1.7	1.4
5/14/2012	0:01:09	0	2779416	593108	1965808	10,394	190		5/11/2012	4.5		4.8		77.7	1.6	21.2	37.3	1.7	1.4
5/15/2012	0:00:54	14	2784520	594098	1967088	10,418	422		5/11/2012	4.5		4.8		77.9	1.6	21.2	37.4	1.7	1.4
5/16/2012	0:01:57	19	2791952	594994	1968765	10,442	544		5/16/2012	2.8		4.2		78.1	1.6	21.2	37.5	1.7	1.5
5/17/2012	0:01:42	24	2801331	596155	1971445	10,466	545		5/16/2012	2.8		4.2		78.3	1.6	21.2	37.7	1.7	1.5

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
5/18/2012	0:01:39	18	2808132	596791	1973858	10,490	552		5/18/2012	2.2		2.7		78.5	1.6	21.2	37.8	1.7	1.5
5/19/2012	0:01:37	20	2816078	597746	1975435	10,514	484		5/18/2012	2.2		2.7		78.6	1.6	21.2	37.8	1.7	1.5
5/20/2012	0:01:35	24	2826199	599304	1977181	10,538	527		5/18/2012	2.2		2.7		78.7	1.6	21.2	37.9	1.7	1.5
5/21/2012	0:01:32	24	2836764	600877	1978695	10,562	527		5/21/2012	2.3		2.6		78.8	1.6	21.2	38.0	1.7	1.5
5/22/2012	0:01:30	24	2847535	602458	1981065	10,586	544		5/21/2012	2.3		2.6		79.0	1.6	21.2	38.2	1.7	1.5
5/23/2012	0:01:08	18	2855528	603562	1983710	10,610	543		5/23/2012	2.8		3.1		79.1	1.6	21.2	38.3	1.7	1.5
5/24/2012	0:01:06	17	2863132	604628	1986824	10,634	562		5/23/2012	2.8		3.1		79.3	1.6	21.2	38.4	1.7	1.5
5/25/2012	0:01:04	17	2870654	605539	1990094	10,658	586		5/23/2012	26.6		27.1		80.8	1.7	21.3	39.8	1.7	1.5
5/26/2012	0:00:06	23	2881183	606484	1993613	10,682	614		5/23/2012	26.6		27.1		82.4	1.7	21.3	41.2	1.7	1.5
5/27/2012	0:00:17	24	2892241	608110	1998261	10,706	670		5/23/2012	26.6		27.1		84.0	1.7	21.3	42.8	1.7	1.5
5/28/2012	0:00:01	24	2903414	610133	2003948	10,730	660		5/23/2012	26.6		27.1		85.6	1.7	21.4	44.3	1.7	1.6
5/28/2012	23:59:59	24	2914507	612160	2009537	10,754	660		5/29/2012	2.8		3.1		85.8	1.7	21.4	44.5	1.7	1.6
5/30/2012	0:00:50	18	2919137	613610	2013375	10,778	602		5/30/2012	1.9		2.1		85.9	1.7	21.4	44.6	1.7	1.6
5/31/2012	0:00:48	15	2920824	614873	2016723	10,802	557		5/30/2012	1.9		2.1		86.0	1.7	21.4	44.7	1.7	1.6
6/1/2012	0:00:45	8	2921977	615619	2018586	10,826	495		6/1/2012	2.7		3.1		86.1	1.7	21.4	44.8	1.7	1.6
6/2/2012	0:00:43	17	2925632	616937	2020870	10,850	502		6/1/2012	2.7		3.1		86.3	1.7	21.4	44.9	1.7	1.6
6/3/2012	0:00:54	24	2933244	618974	2025952	10,874	541		6/1/2012	2.7		3.1		86.5	1.7	21.4	45.0	1.7	1.6
6/4/2012	0:00:39	24	2939022	621008	2031290	10,898	646		6/4/2012	1.6		1.9		86.6	1.7	21.4	45.1	1.7	1.6
6/5/2012	0:00:20	20	2943511	622538	2034963	10,922	632		6/4/2012	1.6		1.9		86.7	1.7	21.4	45.2	1.7	1.6
6/6/2012	0:00:57	18	2949058	623980	2038811	10,946	526		6/6/2012	3.4		3.6		86.8	1.7	21.4	45.3	1.7	1.6
6/7/2012	0:01:08	23	2956801	625734	2043244	10,970	518		6/6/2012	3.4		3.6		87.0	1.7	21.4	45.5	1.7	1.6
6/8/2012	0:00:53	18	2962359	626981	2046007	10,994	455		6/8/2012	2.5		2.7		87.1	1.7	21.5	45.6	1.7	1.6
6/9/2012	0:01:03	19	2968804	628558	2049623	11,018	490		6/8/2012	2.5		2.7		87.2	1.7	21.5	45.7	1.7	1.6
6/10/2012	0:01:01	24	2978243	630805	2055456	11,042	542		6/8/2012	2.5		2.7		87.3	1.7	21.5	45.8	1.7	1.6
6/11/2012	0:00:46	24	2988005	633274	2060997	11,066	519		6/11/2012	2.1		2.3		87.4	1.8	21.5	45.8	1.7	1.6
6/12/2012	0:00:43	24	2997082	635646	2066259	11,090	502		6/11/2012	2.1		2.3		87.6	1.8	21.5	45.9	1.7	1.6
6/13/2012	0:01:34	16	3002628	637215	2069704	11,114	514		6/13/2012	6.6		7.5		87.9	1.8	21.5	46.2	1.7	1.6
6/14/2012	0:01:44	24	3011836	639087	2075887	11,138	525		6/13/2012	6.6		7.5		88.2	1.8	21.5	46.5	1.7	1.6
6/15/2012	0:01:42	17	3017687	640201	2079588	11,162	516		6/15/2012	1.9		2.0		88.3	1.8	21.5	46.6	1.7	1.6
6/16/2012	0:01:27	24	3027283	641849	2085318	11,186	523		6/15/2012	1.9		2.0		88.4	1.8	21.5	46.7	1.7	1.6
6/17/2012	0:01:25	24	3037187	642609	2090137	11,210	493		6/15/2012	1.9		2.0		88.5	1.8	21.6	46.7	1.7	1.6
6/18/2012	0:01:22	24	3047107	643929	2095558	11,234	505			**3.3**		**3.9**		88.7	1.8	21.6	46.9	1.7	1.6
6/19/2012	0:01:33	20	3054674	644604	2099111	11,258	571			**3.3**		**3.9**		88.9	1.8	21.6	47.0	1.7	1.6
6/20/2012	0:02:10	19	3061426	645671	2102215	11,282	534			**3.3**		**3.9**		89.1	1.8	21.6	47.1	1.7	1.6
6/21/2012	0:02:08	24	3071293	646618	2107043	11,306	497			**3.3**		**3.9**		89.3	1.8	21.6	47.2	1.7	1.6
6/22/2012	0:02:19	13	3075506	647315	2108834	11,330	576			**3.3**		**3.9**		89.5	1.8	21.6	47.3	1.7	1.6
6/23/2012	0:02:03	21	3082452	648534	2111710	11,354	614			**3.3**		**3.9**		89.7	1.8	21.6	47.4	1.7	1.6
6/24/2012	0:02:01	24	3090982	649998	2116386	11,378	593			**3.3**		**3.9**		89.9	1.8	21.6	47.5	1.7	1.6
6/25/2012	0:01:59	24	3100031	651452	2121324	11,402	586			**2.4**		**2.7**		90.0	1.8	21.6	47.6	1.7	1.6
6/26/2012	0:01:56	24	3110055	652831	2124847	11,426	597			**2.4**		**2.7**		90.1	1.8	21.6	47.7	1.7	1.6
6/27/2012	0:03:00	17	3116071	653593	2127564	11,450	589			**2.4**		**2.7**		90.3	1.8	21.7	47.8	1.7	1.6
6/28/2012	0:02:31	24	3125446	654781	2130810	11,474	521			**2.4**		**2.7**		90.4	1.8	21.7	47.9	1.7	1.6
6/29/2012	0:02:29	18	3131815	655638	2132842	11,498	467			**2.4**		**2.7**		90.5	1.8	21.7	48.1	1.7	1.6
6/30/2012	0:02:27	18	3138269	656503	2134800	11,522	452			**2.4**		**2.7**		90.6	1.8	21.7	48.2	1.7	1.6
7/1/2012	0:00:14	24	3147959	657192	2137945	11,546	494			**2.4**		**2.7**		90.7	1.8	21.7	48.4	1.7	1.6
7/2/2012	0:00:12	24	3157709	657681	2142234	11,570	487		7/2/2012	2.0		2.2		90.8	1.8	21.7	48.5	1.7	1.6
7/3/2012	0:00:10	20	3165178	658367	2145850	11,594	461		7/3/2012	2.2		2.4		90.9	1.8	21.7	48.6	1.7	1.6
7/4/2012	0:00:59	17	3171315	659225	2148597	11,618	512		7/3/2012	2.2		2.4		91.0	1.8	21.7	48.7	1.7	1.6
7/5/2012	0:00:59	24	3181043	659475	2152992	11,642	519		7/3/2012	2.2		2.4		91.2	1.8	21.7	48.8	1.7	1.6
7/6/2012	0:00:13	19	3186106	659978	2155531	11,666	587		7/6/2012	1.6		1.9		91.3	1.8	21.7	48.8	1.7	1.6
7/7/2012	0:00:11	24	3192712	661216	2158971	11,690	504		7/6/2012	1.6		1.9		91.3	1.8	21.7	48.9	1.7	1.6
7/8/2012	0:00:08	24	3202404	662444	2162959	11,714	457		7/6/2012	1.6		1.9		91.4	1.8	21.7	48.9	1.7	1.6
7/9/2012	0:00:07	24	3212188	663722	2167038	11,738	426		7/9/2012	0.7		0.8		91.4	1.8	21.7	49.0	1.7	1.6
7/10/2012	0:00:17	24	3222012	665220	2171253	11,762	427		7/9/2012	0.7		0.8		91.5	1.8	21.7	49.0	1.7	1.6
7/11/2012	0:00:55	19	3229241	666223	2174369	11,786	411		7/11/2012	7.0		8.6		91.8	1.8	21.7	49.2	1.7	1.6

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
7/12/2012	0:01:06	18	3234499	667051	2177270	11,810	446		7/11/2012	7.0		8.6		92.1	1.8	21.8	49.5	1.7	1.6
7/13/2012	0:01:04	18	3239697	668065	2180378	11,834	501		7/13/2012	2.0		2.1		92.2	1.8	21.8	49.6	1.7	1.6
7/14/2012	0:00:48	23	3247437	668999	2184473	11,858	521		7/13/2012	2.0		2.1		92.3	1.8	21.8	49.7	1.7	1.6
7/15/2012	0:00:59	24	3254860	670674	2187813	11,882	513		7/13/2012	2.0		2.1		92.4	1.8	21.8	49.8	1.7	1.6
7/16/2012	0:00:44	24	3262338	672351	2190188	11,906	539		7/16/2012	0.7		0.7		92.5	1.8	21.8	49.8	1.7	1.6
7/17/2012	0:00:41	24	3269782	673987	2193136	11,930	558		7/16/2012	0.7		0.7		92.5	1.8	21.8	49.8	1.7	1.6
7/18/2012	0:01:32	20	3274837	674697	2195420	11,954	546		7/18/2012	2.1		2.3		92.6	1.8	21.8	49.9	1.7	1.6
7/19/2012	0:01:29	24	3280228	675718	2197975	11,978	553		7/18/2012	2.1		2.3		92.7	1.8	21.8	50.0	1.7	1.6
7/20/2012	0:01:27	20	3284943	676596	2200266	12,002	503		7/20/2012	6.4		6.6		93.0	1.8	21.8	50.3	1.7	1.6
7/21/2012	0:01:25	16	3287806	677189	2201986	12,026	393		7/20/2012	6.4		6.6		93.3	1.9	21.9	50.5	1.7	1.6
7/22/2012	0:01:36	24	3294038	678305	2204904	12,050	377		7/20/2012	6.4		6.6		93.5	1.9	21.9	50.6	1.7	1.6
7/23/2012	0:01:20	24	3300346	679435	2207834	12,074	377		7/23/2012	0.9		1.1		93.5	1.9	21.9	50.7	1.7	1.6
7/24/2012	0:01:18	24	3306576	680557	2210758	12,098	466		7/23/2012	0.9		1.1		93.6	1.9	21.9	50.7	1.7	1.6
7/25/2012	0:02:08	17	3310378	681132	2212615	12,122	506		7/25/2012	8.0		8.4		93.9	1.9	22.0	51.0	1.7	1.6
7/26/2012	0:02:06	24	3317586	681678	2215968	12,146	510		7/25/2012	8.0		8.4		94.3	1.9	22.0	51.3	1.7	1.6
7/27/2012	0:02:04	17	3321908	682040	2218115	12,170	538		7/27/2012	1.1		4.9		94.6	1.9	22.0	51.4	1.7	1.6
7/28/2012	0:00:12	9	3324465	682223	2219415	12,194	503		7/27/2012	1.1		4.9		94.8	1.9	22.0	51.4	1.7	1.6
7/29/2012	0:00:10	0	3324465	682223	2219415	12,218	451		7/27/2012	1.1		4.9		95.0	1.9	22.0	51.4	1.7	1.6
7/30/2012	0:00:08	0	3324466	682223	2219412	12,242	346		7/27/2012	1.1		4.9		95.1	1.9	22.1	51.5	1.7	1.6
7/31/2012	0:00:06	10	3327249	682461	2219412	12,266	324		7/31/2012	0.7		1.1		95.2	1.9	22.1	51.5	1.7	1.6
8/1/2012	0:00:17	16	3331711	682748	2220238	12,290	425		8/1/2012	0.9		1.0		95.2	1.9	22.1	51.5	1.7	1.6
8/2/2012	0:00:16	19	3336431	683335	2222056	12,314	433		8/1/2012	0.9		1.0		95.3	1.9	22.1	51.5	1.7	1.6
8/3/2012	0:00:16	19	3341615	683569	2223646	12,338	403		8/3/2012	1.4		1.6		95.3	1.9	22.1	51.6	1.7	1.6
8/4/2012	0:00:13	17	3345719	683978	2225436	12,362	447		8/3/2012	1.4		1.6		95.4	1.9	22.1	51.6	1.7	1.6
8/5/2012	0:00:11	24	3352390	684678	2228415	12,386	493		8/3/2012	1.4		1.6		95.4	1.9	22.1	51.7	1.7	1.6
8/6/2012	0:00:09	24	3359093	685379	2230870	12,410	429		8/6/2012	0.5		0.6		95.5	1.9	22.1	51.7	1.7	1.6
8/7/2012	0:00:06	24	3365811	686080	2233323	12,434	441		8/6/2012	0.5		0.6		95.5	1.9	22.1	51.7	1.7	1.6
8/8/2012	0:00:04	17	3370400	686579	2235069	12,458	499		8/8/2012	0.7		0.8		95.5	1.9	22.1	51.7	1.7	1.6
8/9/2012	0:00:09	17	3375193	686963	2237172	12,482	455		8/8/2012	0.7		0.8		95.6	1.9	22.1	51.7	1.7	1.6
8/10/2012	0:00:59	18	3380015	687213	2239664	12,506	446		8/10/2012	2.7		2.9		95.7	1.9	22.2	51.8	1.7	1.6
8/11/2012	0:00:20	24	3388064	687920	2243470	12,530	455		8/10/2012	2.7		2.9		95.8	1.9	22.3	51.8	1.7	1.6
8/12/2012	0:00:31	23	3394676	688222	2246571	12,554	443		8/10/2012	2.7		2.9		95.9	1.9	22.4	51.8	1.7	1.6
8/13/2012	0:00:15	24	3402264	688820	2250380	12,578	503		8/13/2012	0.9		1.0		96.0	1.9	22.4	51.8	1.7	1.6
8/14/2012	0:00:13	24	3411378	689533	2254919	12,602	494		8/13/2012	0.9		1.0		96.0	1.9	22.4	51.9	1.7	1.6
8/15/2012	0:00:24	16	3416462	689680	2257088	12,626	470		8/15/2012	1.0		1.1		96.1	1.9	22.4	51.9	1.7	1.6
8/16/2012	0:00:08	24	3424697	689680	2260274	12,650	557		8/15/2012	1.0		1.1		96.1	1.9	22.4	51.9	1.7	1.6
8/17/2012	0:00:19	18	3429739	689680	2262256	12,674	610		8/17/2012	0.2		0.2		96.1	1.9	22.5	51.9	1.7	1.6
8/18/2012	0:00:04	20	3435807	689829	2264585	12,698	620		8/17/2012	0.2		0.2		96.1	1.9	22.5	51.9	1.7	1.6
8/19/2012	0:00:01	24	3444608	689834	2268010	12,722	612		8/17/2012	0.2		0.2		96.2	1.9	22.5	51.9	1.7	1.6
8/19/2012	23:59:59	15	3446978	689834	2269897	12,746	502		8/20/2012	0.6		0.7		96.2	1.9	22.5	52.0	1.7	1.6
8/21/2012	0:00:11	16	3451449	689843	2272147	12,770	563		8/20/2012	0.6		0.7		96.2	1.9	22.5	52.0	1.7	1.6
8/22/2012	0:00:10	17	3456900	689939	2274770	12,794	585		8/22/2012	0.2		0.2		96.2	1.9	22.5	52.0	1.7	1.6
8/23/2012	0:00:08	24	3465834	690385	2279505	12,818	591		8/22/2012	0.2		0.2		96.2	1.9	22.5	52.0	1.7	1.6
8/24/2012	0:00:05	17	3470302	690545	2282453	12,842	608		8/24/2012	0.3		0.5		96.3	1.9	22.5	52.0	1.8	1.7
8/25/2012	0:00:03	24	3476936	690547	2287471	12,866	660		8/24/2012	0.3		0.5		96.3	2.0	22.5	52.0	1.8	1.7
8/26/2012	0:00:01	24	3485639	690547	2292560	12,890	869		8/24/2012	0.3		0.5		96.3	2.0	22.5	52.0	1.8	1.7
8/26/2012	23:59:58	24	3494464	690547	2297686	12,914	486	382	8/27/2012	0.3	0.5	0.5	0.7	96.4	2.0	22.5	52.0	1.8	1.7
8/27/2012	23:59:56	13	3498407	690583	2299923	12,938	447	348	8/27/2012	0.3	0.5	0.4	0.7	96.4	2.0	22.6	52.0	1.8	1.7
8/28/2012	23:59:54	17	3503347	690770	2303037	12,962	445	386	8/27/2012	0.3	0.5	0.4	0.7	96.4	2.0	22.6	52.1	1.8	1.7
8/29/2012	23:59:51	13	3506665	690876	2305652	12,986	411	288	8/29/2012	1.2	0.6	1.3	0.7	96.5	2.0	22.6	52.1	1.8	1.7
8/30/2012	23:59:49	9	3508760	691004	2307454	13,010	392	271	8/29/2012	1.2	0.6	1.3	0.7	96.6	2.0	22.6	52.2	1.8	1.7
9/1/2012	0:00:14	20	3513943	691010	2311360	13,034	501	395	8/31/2012	1.0	0.6	1.1	0.7	96.7	2.0	22.7	52.2	1.8	1.7
9/2/2012	0:00:12	24	3521905	691010	2316676	13,058	474	366	8/31/2012	1.0	0.6	1.1	0.7	96.7	2.0	22.7	52.2	1.8	1.7
9/3/2012	0:00:10	24	3530289	691010	2322061	13,082	428	328	8/31/2012	1.0	0.6	1.1	0.7	96.8	2.0	22.7	52.3	1.8	1.7
9/3/2012	23:59:54	24	3538806	691010	2327512	13,106	418	326	8/31/2012	1.0	0.6	1.1	0.7	96.8	2.0	22.7	52.3	1.8	1.7

Date	Time	Hrs, power on prev 24	KW-hrs, PSU 1	KW-hrs, PSU 2	KW-hrs, PSU3	VEU hrs	Coalescer /stack flow, scfm	2nd train flow	date of SAMPLE*	Primary cocs, ug/l	Primary cocs, ug/l,2nd train	Total vocs detected (ug/l)	Total vocs detected (ug/l), 2nd train	Cumulative VOC Mass removed, lbs	DBCP Removed, lbs (ND=0.5*RL)	TCP Removed, lbs (ND=0.5*RL)	12DCP Removed, lbs (ND=0.5*RL)	EDB Removed, lbs (ND=0.5*RL)	VBr Removed, lbs (ND=0.5*RL)
9/5/2012	0:00:10	15	3543799	691186	2330711	13,130	481	242	9/5/2012	0.3	0.3	0.8	0.5	96.9	2.0	22.7	52.3	1.8	1.7
9/6/2012	0:00:08	24	3552371	691983	2336541	13,154	472	351	9/5/2012	0.3	0.3	0.8	0.5	96.9	2.0	22.8	52.3	1.8	1.7
9/7/2012	0:00:05	17	3557640	692458	2339995	13,178	448	354	9/7/2012	0.3	0.3	0.5	0.5	97.0	2.0	22.8	52.3	1.8	1.7
9/8/2012	0:03:30	24	3566248	693282	2345831	13,202	427	325	9/7/2012	0.3	0.3	0.5	0.5	97.0	2.0	22.8	52.3	1.8	1.7
9/9/2012	0:03:28	24	3574856	693942	2351670	13,226	432	324	9/7/2012	0.3	0.3	0.5	0.5	97.0	2.0	22.8	52.3	1.8	1.7
9/10/2012	0:03:38	24	3583439.5	693942	2357503.5	13,250	436	323	9/10/2012	0.2	0.2	0.4	0.3	97.1	2.0	22.8	52.3	1.8	1.7
9/11/2012	0:03:23	24	3592008	694440	2363344.5	13,274	440	314	9/10/2012	0.2	0.2	0.4	0.3	97.1	2.0	22.8	52.4	1.8	1.7
9/12/2012	0:03:21	17	3597064.75	694899	2366369.3	13,298	432	324	9/12/2012	0.1	0.2	0.1	0.3	97.1	2.0	22.8	52.4	1.8	1.7
9/13/2012	0:03:18	24	3604907	695502	2370634	13,322	457	294	9/12/2012	0.1	0.2	0.1	0.3	97.1	2.0	22.8	52.4	1.8	1.7
9/14/2012	0:00:12	18	3610238.25	695932	2373478	13,346	499	173	9/14/2012	0.4	0.2	1.2	0.4	97.2	2.0	22.8	52.4	1.8	1.7
9/15/2012	0:01:02	24	3617956.5	696765	2377902	13,370	531	191	9/14/2012	0.4	0.2	1.2	0.4	97.2	2.0	22.8	52.4	1.8	1.7
9/16/2012	0:01:00	21	3624208.75	697454	2381604.5	13,394	492	190		**0.2**	**0.2**	**0.5**	**0.4**	97.3	2.0	22.8	52.4	1.8	1.7
9/17/2012	0:00:57	24	3631719	698288	2386346	13,418	494	194		**0.2**	**0.2**	**0.5**	**0.4**	97.3	2.0	22.8	52.4	1.8	1.7
9/18/2012	0:00:55	24	3638832	699097	2390890	13,442	512	242		**0.2**	**0.2**	**0.5**	**0.4**	97.3	2.0	22.8	52.4	1.8	1.7
9/19/2012	0:00:53	17	3643710	699383	2393976	13,466	566	232		**0.2**	**0.2**	**0.5**	**0.4**	97.4	2.0	22.8	52.4	1.8	1.7
9/20/2012	0:00:50	23.5	3651181	699574	2398410	13,490	510	320		**0.2**	**0.2**	**0.5**	**0.4**	97.4	2.0	22.8	52.4	1.8	1.7
9/21/2012	0:00:08	19	3656500	699893	2401044	13,514	471	354		**0.2**	**0.2**	**0.5**	**0.4**	97.4	2.0	22.9	52.4	1.8	1.7
9/22/2012	0:00:59	24	3665057	700367	2405598	13,538	480	350		**0.2**	**0.2**	**0.5**	**0.4**	97.5	2.0	22.9	52.4	1.8	1.7
9/23/2012	0:00:56	24	3673875	700978	2410408	13,562	453	328		**0.2**	**0.2**	**0.5**	**0.4**	97.5	2.0	22.9	52.4	1.8	1.7
9/24/2012	0:00:54	22	3681995	701578	2414860	13,586	473	354	9/24/2012	0.2	0.2	0.4	0.3	97.5	2.0	22.9	52.4	1.8	1.7
9/25/2012	0:01:05	6	3683854	701703	2415828	13,610	492	365	9/24/2012	0.2	0.2	0.4	0.3	97.5	2.1	22.9	52.4	1.8	1.7
9/26/2012	0:00:49	24	3691968	702270	2420667	13,634	468	342	9/26/2012	0.01	0.01	0.04	0.05	97.5	2.1	22.9	52.4	1.8	1.7
9/27/2012	0:00:47	24	3700210	702842	2425574	13,658	444	336	9/26/2012	0.01	0.01	0.04	0.05	97.6	2.1	22.9	52.4	1.8	1.7
9/28/2012	0:00:45	18	3705518	703217	2428629	13,682	408	321	9/28/2012	0.3	0.2	1.0	0.4	97.6	2.1	22.9	52.4	1.8	1.7
9/29/2012	0:01:35	17	3710370	703589	2431582	13,706	401	312	9/28/2012	0.3	0.2	1.0	0.4	97.7	2.1	22.9	52.4	1.8	1.7
9/30/2012	0:01:33	24	3718424	704155	2436488	13,730	396	321	9/28/2012	0.3	0.2	1.0	0.4	97.7	2.1	22.9	52.5	1.8	1.7
10/1/2012	0:01:31	24	3726594	704724	2441398	13,754	393	316	10/1/2012	0.1	0.1	0.2	0.2	97.7	2.1	22.9	52.5	1.8	1.7
10/2/2012	0:01:28	24	3734723	705294	2446312	13,778	317	304	10/1/2012	0.1	0.1	0.2	0.2	97.7	2.1	22.9	52.5	1.8	1.7
10/3/2012	0:00:17	18.5	3740378	705677	2449696	13,802	249	333	10/3/2012	0.0	0.1	0.0	0.2	97.7	2.1	23.0	52.5	1.8	1.7
10/4/2012	0:00:15	21	3747068	706125	2453481	13,826	0	345	10/3/2012	0.0	0.1	0.0	0.2	97.7	2.1	23.0	52.5	1.8	1.7
10/5/2012	0:00:08	15	3751848	706448	2456278	13,850	250	309	10/5/2012	0.1	0.1	0.1	0.1	97.7	2.1	23.0	52.5	1.8	1.7
10/6/2012	0:01:12	21	3758873	706907	2460222	13,874	508	369	10/5/2012	0.1	0.1	0.1	0.1	97.7	2.1	23.0	52.5	1.8	1.7
10/7/2012	0:00:57	24	3767432	707474	2465100	13,898	514	359		0.1	0.1	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/8/2012	0:00:54	24	3775990	708042	2470010	13,922	504	359	10/8/2012	0.1	0.1	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/9/2012	0:00:52	24	3784540	708610	2474761	13,946	513	366	10/8/2012	0.1	0.1	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/10/2012	0:01:03	21	3790812	709036	2477894	13,970	520	363	10/10/2012	0.03	0.1	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/11/2012	0:00:47	24	3798515	709584	2482231	13,994	508	355	10/10/2012	0.03	0.1	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/12/2012	0:00:45	11	3800666	709801	2483981	14,018	548	379	10/12/2012	0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/13/2012	0:01:35	0	3800887	709801	2483981	14,042	558	385		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/14/2012	0:01:20	0	3801101	709801	2483981	14,066	526	367		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/15/2012	0:01:31	0	3801385.75	709801	2483981	14,090	518	364		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/16/2012	0:01:28	0	3801693.75	709801	2483981	14,114	497	354		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/17/2012	0:01:26	0	3802007	709801	2483981	14,138	486	349		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/18/2012	0:01:24	0	3802265.75	709801	2483981	14,160	466	333		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/19/2012	0:01:21	0	3802265.75	709801	2483981	14,160	0	0		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/20/2012	0:02:10	0	3802518.5	709801	2483981	14,174	305	170		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
10/21/2012	0:02:08	0	3802712.5	709801	2483981	14,198	538	306		0.05	0.05	0.1	0.1	97.8	2.1	23.0	52.5	1.8	1.7
														TOTAL	**2.1**	**23.0**	**52.5**	**1.8**	**1.7**
						Average of Train 1 and 2													
							581												

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
A2	2/7/2011	6	<20	<10	6	<20
	4/6/2011	10	<42	<29	10	<9.3
	5/3/2011	56	<42	<26	56	<8.3
	5/19/2011	32	<42	<26	32	<8.3
	6/1/2011	36	<160	<100	36	<32
	6/15/2011	120	<420	<260	120	<83
	6/29/2011	49	<400	<250	49	<80
	7/13/2011	55	<170	<110	55	<34
	7/26/2011	30	<160	<100	30	<33
	8/9/2011	30	<140	<87	30	<8.7
A3	2/7/2011	20	<20	<10	20	<20
	4/6/2011	85	<47	<29	85	<9.3
	4/28/2011	0	<43	<27	<5.2	<8.6
	5/3/2011	46	<42	<26	46	<8.3
	5/19/2011	80	<42	<26	80	<8.4
	6/1/2011	26	<41	<26	26	<8.2
	6/17/2011	84	<170	<110	84	<34
	6/29/2011	170	<420	<260	170	<84
	7/13/2011	110	<170	<110	110	<34
	7/26/2011	53	<160	<100	53	<32
	8/9/2011	117	32	27	58	<17
A4	2/7/2011	610	<20	10	600	<20
	4/6/2011	450	<44	250	200	<8.7
	5/3/2011	151	<43	75	76	<8.6
	5/19/2011	208	<43	110	98	<8.6
	6/1/2011	71	<41	27	44	<8.2
	6/17/2011	140	<160	<100	140	<33
	6/29/2011	170	<690	<430	170	<140
	7/13/2011	300	<170	<100	300	<33
	7/26/2011	110	<160	<100	110	<33
	8/9/2011	166	<170	76	90	<34
A5	2/7/2011	500	<20	<10	500	<20
	4/6/2011	430	<42	60	370	<8.4
	5/3/2011	34	<42	<26	34	<8.3
	6/1/2011	260	<41	120	140	<8.2
	6/15/2011	1,300	<430	<270	1300	<86
	6/29/2011	620	<170	390	230	<34
dupe	6/29/2011	590	<170	370	220	<34
	7/13/2011	570	<160	100	470	<33
	7/26/2011	340	<87	140	200	<17
	8/9/2011	40	<170	24	16	<33
B1	2/7/2011	30	<50	<30	30	<40
	4/6/2011	110	<240	<150	110	<48
	4/28/2011	890	<1100	<680	890	<220
	5/12/2011	470	<430	<270	470	<86
	5/26/2011	440	<2200	<1400	440	<440

Frontier Fertilizer ISTT
Wellhead Sample Results

Location	Date	COCs ug/m3	DBCP ug/m3	TCP ug/m3	DCP ug/m3	EDB ug/m3
	6/23/2011	74	<420	<260	74	<83
	7/6/2011	360	<170	<110	360	<34
	7/20/2011	170	<320	<200	170	<63
	8/2/2011	210	<440	<270	210	<88
	8/16/2011	379	<120	97	260	22
B2	2/7/2011	30	<20	<10	30	<20
	4/6/2011	0	<40	<25	<4.7	<7.9
	4/28/2011	51	<42	<28	51	<8.8
	5/12/2011	700	<170	<110	700	<34
dupe	5/12/2011	830	<180	<110	830	<36
	5/26/2011	280	<91	<56	280	<18
	6/7/2011	53	<170	<110	53	<34
	6/23/2011	240	<240	<160	240	<48
	7/6/2011	14	<110	<70	14	<22
dupe	7/6/2011	40	<140	<88	40	<28
	7/20/2011	120	<240	<170	120	<86
	8/2/2011	41	<120	<72	37	4
	8/16/2011	68	<70	13	50	5
B3	2/7/2011	20	<20	<10	20	<20
	4/6/2011	900	<170	<110	900	<34
	5/3/2011	820	<400	<250	820	<79
	5/19/2011	220	<260	<160	220	<51
	6/15/2011	290	<580	<360	290	<120
	6/29/2011	19,760	<440	3600	16000	160
	7/13/2011	720	<2200	<1400	720	<430
	7/26/2011	0	<330	<220	<39	<65
	8/9/2011	3,080	270	1200	1500	110
	8/25/2011	275	30	45	200	<34
	9/7/2011	873	<850	63	810	<170
B4	2/7/2011	600	<200	<100	600	<200
	4/6/2011	120	<68	<43	120	<14
	5/3/2011	150	<40	<25	150	<8
	5/19/2011	98	<90	<56	98	<18
	6/1/2011	550	<560	<350	550	<110
	6/15/2011	2,110	<420	310	1800	<84
	6/29/2011	180	<730	<460	180	<140
	7/13/2011	550	<2200	<1400	550	<430
dupe	7/13/2011	1,900	<2100	1300	600	<420
	7/26/2011	0	<170	<100	<20	<33
	8/9/2011	4,207	400	760	3000	47
	8/25/2011	790	150	340	300	<83
	9/7/2011	1,124	280	180	640	24
B5	2/7/2011	400	<20	<10	400	<20
	4/6/2011	667	<110	87	580	<23
	5/3/2011	580	<160	<99	580	<32
	5/19/2011	110	<160	<100	110	<33

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	6/1/2011	660	<820	<510	660	<160
	6/17/2011	1,040	<170	620	420	<34
	6/29/2011	1,100	<170	500	600	<34
	7/13/2011	450	<120	<74	450	<24
	7/26/2011	45	<320	<200	45	<64
	8/9/2011	8,100	1000	2300	4700	100
	8/25/2011	255	72	73	110	<17
	9/7/2011	997	180	110	680	27
	9/29/2011	545	9.4	300	160	76
B6	2/7/2011	900	<200	<100	900	<200
	4/6/2011	2,270	<45	870	1400	<9
	5/3/2011	940	<42	380	560	<8.4
	5/19/2011	2,270	<86	770	1500	<17
	6/1/2011	1,970	<160	270	1700	<33
	6/15/2011	11,000	<420	<260	11000	<84
	6/29/2011	249	41	130	78	<8.3
	7/13/2011	620	<160	140	480	<33
	7/26/2011	490	<160	310	180	<33
	8/9/2011	3,942	330	970	2600	42
	8/25/2011	720	370	160	190	<34
	9/7/2011	1,543	43	300	1200	<71
dupe	9/7/2011	1,913	93	520	1300	<32
	9/29/2011	2,215	<250	1200	1000	15
B7	2/7/2011	0	<500	<300	<200	<400
	4/6/2011	440	<120	<74	440	<24
	4/26/2011	45	<43	<27	45	<8.5
	5/10/2011	150	<42	<26	150	<8.3
	5/25/2011	110	<410	<260	110	<82
	6/9/2011	480	<1100	<680	480	<220
	6/21/2011	270	<420	<260	270	<84
	7/7/2011	710	<1900	<1200	710	<380
	7/22/2011	300	<1100	<700	300	<220
	8/4/2011	147	<42	<26	120	27
dupe	8/4/2011	186	<120	<77	180	6
	8/18/2011	157	<270	37	120	<54
B8	2/7/2011	50	<20	<10	50	<20
	4/6/2011	440	<42	<26	440	<8.3
	4/26/2011	15	<44	<27	15	<8.7
	5/10/2011	31	<42	<26	31	<8.4
	5/25/2011	27	<42	<26	27	<8.3
	6/9/2011	140	<160	<100	140	<33
	6/21/2011	520	<420	<260	520	<84
	7/7/2011	240	<970	<610	240	<190
	8/4/2011	250	<1200	250	<150	<240
	8/18/2011	64	<43	10	54	<8.6
	9/29/111	79	<170	40	39	<34

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
B9	2/7/2011	0	<20	<10	<10	<20
	4/11/2011	137	nd	44	93	nd
	4/26/2011	35	<45	<28	35	<8.9
	5/10/2011	55	<42	<26	55	<8.3
	5/25/2011	350	<100	<63	350	<20
	6/9/2011	90	<170	<100	90	<33
	6/21/2011	0	<420	<260	<50	<83
	7/7/2011	400	<180	<110	400	<36
	8/4/2011	58	<40	<25	58	<8
	8/18/2011	33	<42	3.3	30	<8.4
C1	2/7/2011	0	<20	<10	<10	<20
	4/7/2011	25	<49	<30	25	<9.7
	4/28/2011	34	<42	<26	34	<8.4
	5/12/2011	97	<170	<110	97	<34
	5/26/2011	17	<110	<69	17	<22
	6/7/2011	26	<71	<44	26	<14
	6/23/2011	91	<230	<140	91	<46
	7/6/2011	500	<420	<260	500	<83
	7/20/2011	45	<180	<110	45	<36
	8/2/2011	3	<83	<52	<9.9	2.8
	8/16/2011	20	<120	<77	20	<24
C2	2/7/2011	40	<20	<10	40	<20
	4/7/2011	230	<99	<62	230	<20
	4/28/2011	550	<43	<27	550	<8.6
	5/12/2011	1,200	<170	<110	1200	<35
	5/26/2011	550	<2800	<1800	550	<560
	6/7/2011	380	<430	<270	380	<86
	6/23/2011	880	<220	<140	880	<43
	7/6/2011	400	<160	<100	400	<32
	7/22/2011	340	<110	<69	340	<22
	8/2/2011	290	<280	<180	290	<56
	8/16/2011	29	<140	<88	29	<28
C3	2/7/2011	300	<20	<10	300	<20
	4/7/2011	503	<48	62	410	31
	4/28/2011	1,876	<180	140	1700	36
	5/12/2011	4,760	<170	<110	4500	260
	5/26/2011	520	<280	<170	520	<55
	6/7/2011	1,700	<1100	<700	1700	<220
	6/23/2011	3,782	<240	<150	3700	82
	7/6/2011	8,100	<160	1400	6700	<32
	7/20/2011	330	<130	<180	330	<26
	8/2/2011	330	<420	50	280	<83
	8/16/2011	99	<89	55	44	<18
dupe	8/16/2011		<130	58	49	4.2
C4	2/7/2011	200	<20	<10	200	<20
	4/7/2011	166	<47	<29	150	16

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	4/28/2011	2,600	<880	<550	2600	<180
	5/12/2011	3,440	<170	180	3100	160
	5/26/2011	2,500	<820	<510	2500	<160
	6/7/2011	4,100	<640	<400	4100	<130
	6/23/2011	10,840	<220	430	10000	410
	7/6/2011	21,000	<490	3000	18000	<98
	7/20/2011	2,650	<180	190	2400	60
dupe	7/20/2011	2,556	<180	200	2300	56
	8/2/2011	958	<400	100	830	28
	8/16/2011	99	<40	27	70	2.4
	8/30/2011	246	20	45	140	41
	9/14/2011	501	12	140	340	8.9
	9/27/2011	6,527	27	3300	3200	<22
C5	2/7/2011	16,200	<200	1200	15000	<200
	4/7/2011	2,600	<160	1300	1300	<31
	5/3/2011	670	<40	300	370	<8
	5/19/2011	8,600	<270	2700	5900	<54
	6/1/2011	17,800	<1400	10000	7800	<280
	6/15/2011	12,200	<430	4800	7400	<86
	6/29/2011	1,340	<170	1000	340	<33
	7/13/2011	13,200	<280	7400	5800	<56
	7/26/2011	2,536	<170	1100	1400	36
	8/9/2011	1,044	280	270	430	64
dupe	8/9/2011	4,150	1200	960	1800	190
	8/25/2011	526	230	130	160	6.2
	9/7/2011	2,149	810	440	870	29
	9/21/2011	3,177	310	1900	950	17
	10/4/2011	4,380	1000	2700	660	20
C6	2/7/2011	12,900	<200	1900	11000	<200
	4/7/2011	1,220	<190	230	990	<38
	5/3/2011	11,100	<1700	5600	5500	<340
	5/19/2011	9,382	<170	1700	7600	82
	6/1/2011	9,844	<160	2400	7400	44
	6/15/2011	4,200	<170	100	4100	<34
	6/29/2011	17,400	<570	9800	7600	<110
	7/13/2011	7,695	<280	230	7400	65
	7/26/2011	2,200	<330	<210	2200	<66
	8/9/2011	985	160	160	640	25
	8/25/2011	416	170	91	150	5.2
	9/7/2011	2,194	680	930	570	14
	9/21/2011	2,859	19	2100	630	110
	10/4/2011	2,602	530	1500	550	22
C7	2/7/2011	209	<20	9	200	<20
	2/7/2011	200	<20	<10	200	<20
	4/7/2011	4,900	<160	<97	4900	<31
	5/3/2011	9,800	<420	900	8900	<84
dupe	5/3/2011	9,020	<170	920	8100	<34

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	5/19/2011	31,500	<840	2500	29000	<160
	6/1/2011	28,700	<820	6700	22000	<160
	6/15/2011	1,900	<430	<270	1900	<86
	6/29/2011	1,641	<90	220	1400	21
	7/13/2011	2,532	<85	110	2400	22
	7/26/2011	88	<88	<55	88	<18
dupe	7/26/2011	91	<90	<56	91	<18
	8/9/2011	33	<43	5.8	25	2.5
	8/25/2011	695	130	85	480	<35
dupe	8/25/2011	594	<910	84	510	<180
	9/7/2011	840	230	510	94	5.8
	9/21/2011	476	8.2	290	170	8.2
C8	2/7/2011	70	<20	<10	70	<20
	4/7/2011	51	<46	<28	51	<9.1
	4/26/2011	800	<45	<27	800	<9
	5/10/2011	1,200	<43	<27	1200	<8.6
	6/9/2011	2,600	<170	<100	2600	<33
	6/21/2011	9,900	<220	<140	9900	<44
	7/7/2011	720	<180	<110	720	<36
	7/8/2011	1,244	<45	71	1100	73
	7/22/2011	2,450	<79	350	2100	<16
	8/4/2011	1,207	<380	53	1100	54
	8/18/2011	118	<170	28	90	<34
dupe	8/18/2011	112	<170	26	86	<34
	9/29/2011	1,202	11	850	320	21
C9	2/7/2011	20	<30	<20	20	<20
	2/7/2011	20	<30	<20	20	<20
	4/7/2011	23	<46	<29	23	<9.2
	4/26/2011	350	<120	<74	350	<24
	5/10/2011	10	<43	<26	10	<8.3
	5/25/2011	870	<810	<500	870	<160
	6/9/2011	290	<410	<260	290	<82
	6/21/2011	310	<180	<110	310	<35
	7/8/2011	8,000	<230	<140	8000	<46
dupe	7/8/2011	9,200	<220	<140	9200	<43
	7/22/2011	530	<180	<110	530	<36
	8/9/2011	873	<170	<100	860	13
	8/18/2011	42	<85	5.7	36	<17
C10	2/8/2011	7	<20	<10	7	<20
	4/7/2011	30	<39	<24	30	<7.8
	4/26/2011	69	<45	<28	69	<9
	5/10/2011	84	<43	<27	84	<8.5
	5/25/2011	410	<170	<110	410	<34
	6/9/2011	380	<550	<340	380	<110
	6/28/2011	250	<410	<260	250	<82
	7/8/2011	320	<43	<27	320	<8.6
	7/22/2011	3,486	<120	150	3300	36
	8/4/2011	104	<40	16	85	2.6

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	8/18/2011	27	<41	<26	27	<8.2
D1	2/7/2011	0	<20	<10	<9	<20
	4/6/2011	0	<76	<48	<9.2	<15
	4/28/2011	34	<44	<28	34	<8.8
	5/10/2011	0	<41	<26	<5.1	<8.4
	5/26/2011	0	<42	<26	<5.1	<8.4
	6/7/2011	34	<41	<26	34	<8.2
	6/23/2011	54	<42	<26	54	<8.3
	7/6/2011	460	<170	<110	460	<34
	7/20/2011	28	<57	<35	28	<11
	8/2/2011	30	<85	21	9.2	<17
	8/16/2011	19	<42	8.9	7.9	2
D2	7/20/2011	890	<180	<110	890	<36
	8/2/2011	480	<430	190	290	<85
	8/16/2011	789	<57	260	520	8.8
	8/30/2011	920	<570	260	660	<110
	9/14/2011	931	82	88	750	11
	9/27/2011	43,186	46	18000	25000	140
D3	2/7/2011	0	<10	<6	<5	<8
	4/6/2011	36	<44	<27	36	<8.7
	5/10/2011	44	<41	<26	44	<8.2
	5/26/2011	11	<53	<33	11	<10
	6/7/2011	4,320	<160	220	4100	<33
	6/23/2011	7,150	<140	350	6800	<28
	7/6/2011	3,400	<8500	<5300	3400	<1700
D10	2/7/2011	20	<20	<20	20	<20
	4/6/2011	680	<43	<27	680	<8.6
	4/26/2011	83	<41	<26	83	<8.1
	5/10/2011	140	<43	<27	140	<8.5
	5/25/2011	120	<38	<24	120	<7.6
	6/9/2011	1,300	<160	<100	1300	<33
	6/21/2011	5,000	<2600	<1600	5000	<520
	7/8/2011	8,000	<180	300	7700	<36
	7/22/2011	3,486	<120	150	3300	36
	8/4/2011	819	<270	<170	800	19
	8/18/2011	93	<87	<54	93	<17
	9/14/2011	690	<430	<270	690	<86
	9/27/2011	290	<280	<170	290	<55
	10/25/2011	806	<66	350	450	6
	11/8/2011	501	81	290	130	<9
D11	2/7/2011	30	<20	<10	30	<20
	4/6/2011	450	<2200	<1100	450	<440
	4/26/2011	360	<42	<26	360	<8.4
	5/10/2011	810	<43	<27	810	<8.6
	5/25/2011	7,300	<200	<120	7300	<40

Frontier Fertilizer ISTT
Wellhead Sample Results

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	6/9/2011	460	<170	<100	460	<33
	6/21/2011	2,700	<430	<270	2700	<86
	7/8/2011	7400	<210	<130	7400	<42
	7/22/2011	2800	<100	<64	2800	<20
	8/4/2011	2860	<82	360	2500	<16
	8/18/2011	1,840	<41	240	1600	<8.2
	8/30/2011	3,607	<110	<66	3600	6.5
	9/13/2011	902	<42	120	780	1.6
	9/27/2011	1,500	<60	<37	1500	<12

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
E1	6/29/2011	61	<43	34	27	<8.6
	9/15/2011	402,400	1400	39000	350000	12000
	9/30/2011	2,616	8.4	180	2400	28
	10/14/2011	1,348	12	120	1200	16
	10/27/2011	2,716	4	1100	1600	12
	11/8/2011	1,926	13	320	1500	93
	11/22/2011	17,227	<350	6200	11000	27
	12/6/2011	13,247	93	1100	12000	54
	12/21/2011	8,157	<390	340	7800	17
	1/5/2012	372	<280	110	250	12
	1/18/2012	27,717	280	3400	24000	37
	1/31/2012	2,514	12	580	1900	22
dupe	1/31/2012	2,565	12	530	2000	23
	2/14/2012	3,162	<1800	<1100	3100	62
	3/2/2012	7,953	600	3300	4000	53
	3/12/2012	1,156	24	690	420	22
	3/27/2012	680	21	330	310	19
	4/11/2012	810	18	310	440	42
	4/11/2012	787	15	290	440	42
	4/24/2012	1,830	<380	280	1400	150
	5/8/2012	6,070	<10000	<6200	5400	670
	5/22/2012	1,870	<710	240	1500	130
	6/5/2012	452	<140	80	340	32
	6/19/2012	1,700	<1400	<890	1600	100
	7/3/2012	1,046	<350	140	870	36
E2	6/30/2011	340	<81	150	190	<16
	9/15/2011	82,000	2600	19000	58000	2400
	9/30/2011	5,429	<170	590	4800	39
	10/14/2011	4,791	7	370	4400	14
	10/27/2011	5,289	8	570	4700	11
	11/8/2011	11,150	100	1000	10000	50
	11/22/2011	13,853	36	1800	12000	17
	12/6/2011	130,600	600	10000	120000	<1000
	12/21/2011	28,559	240	3300	25000	19
	1/5/2012	7,886	680	1800	5400	6.3
dupe	1/5/2012	8,168	760	1900	5500	7.7
	1/18/2012	29,789	670	3100	26000	19
	1/31/2012	88,000	<9600	22000	66000	<1900
	2/14/2012	36,460	1900	<17000	34000	560
	3/1/2012	42,274	180	16000	26000	94
dupe	3/1/2012	37,266	180	14000	23000	86
	3/12/2012	1,647	22	950	660	15
	3/27/2012	1,325	<27	980	330	15
	4/11/2012	328	9.3	150	160	9.1
	4/24/2012	598	6.6	200	350	41
	5/8/2012	524	<520	<320	480	44
	5/22/2012	839	<1100	<680	760	79
	6/5/2012	515	<280	<180	480	35

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	6/19/2012	669	<1400	<890	590	79
	7/3/2012	525	<1200	<720	440	85
E3	6/30/2011	2,100	<170	1100	1000	<34
	9/15/2011	40,600	5900	8900	25000	800
	9/30/2011	79,300	<2700	7500	66000	5800
	10/14/2011	36,350	<1100	6900	29000	450
	10/27/2011	38,120	<990	7000	31000	120
	11/8/2011	37,032	<1400	10000	27000	32
	11/22/2011	13,385	62	3400	9900	23
dupe	11/22/2011	13,770	70	4100	9600	<69
	12/6/2011	135,460	460	25000	110000	<90
	12/21/2011	65,460	460	20000	45000	<620
	1/5/2012	2,807	<290	1300	1500	7.1
	1/18/2012	5,715	15	2200	3500	<22
dupe	1/18/2012	5,817	13	2200	3600	3.6
	1/31/2012	18,200	<2400	9800	8400	<480
	2/14/2012	2,585	440	<1800	2100	45
	3/1/2012	11,010	210	7500	3300	<230
	3/12/2012	227	8.6	160	56	2.4
	3/27/2012	810	<280	150	660	<56
	4/11/2012	62	6.3	32	20	3.9
	4/24/2012	87	<110	24	55	7.6
	5/8/2012	160	<300	<190	140	20
	5/22/2012	91	<1100	<710	91	<230
	6/5/2012	124	<140	<90	110	14
	6/19/2012	80	<94	<59	66	14
	7/3/2012	66	<87	<54	53	13
F1	7/6/2011	710	<430	<270	710	<85
	9/15/2011	810	22	530	250	7.6
	9/30/2011	1,030	<53	280	620	130
	10/14/2011	930	6.1	280	620	24
	10/27/2011	309	6	130	170	3
	11/8/2011	2,457	31	420	2000	5.6
	11/22/2011	428	5	190	230	2.6
	12/6/2011	8,620	120	6600	1900	<28
	12/21/2011	12,259	150	4700	7400	8.5
	1/5/2012	21,000	<580	1000	20000	<120
lab rerun	1/5/2012	20,916	<290	910	20000	5.7
	1/18/2012	52,660	260	8400	44000	<210
	1/31/2012	29,100	<940	4100	25000	<190
	2/14/2012	9,499	99	<180	9400	<56
	3/1/2012	21,320	<580	3200	18000	120
	3/12/2012	3,909	13	490	3400	6.1
lab rerun	3/12/2012	4,029	12	510	3500	6.9
	3/28/2012	604	9.5	180	410	4.2
	4/11/2012	613	<29	120	490	3.3
	4/11/2012	642	<28	140	500	2.3
	5/8/2012	3,270	<750	670	2600	<150

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	5/22/2012	740	<300	200	540	<60
	6/5/2012	370	<69	62	300	7.5
	6/19/2012	974	<58	240	720	14
	7/3/2012	785	<180	220	550	15
F2	7/6/2011	5,000	<120	<78	5000	<25
	9/15/2011	43,338	58	17000	26000	280
dupe	9/15/2011	32,232	52	10000	22000	180
	9/30/2011	32,645	<1400	560	32000	85
	10/14/2011	24,426	<710	400	24000	26
	10/27/2011	115,120	510	4500	110000	110
	11/8/2011	112,800	<4000	2800	110000	<800
	11/22/2011	48,397	67	1300	47000	30
	12/6/2011	168,130	15000	23000	130000	130
	12/21/2011	169,254	270	8900	160000	84
	1/5/2012	419,400	1400	8000	410000	<2600
	1/18/2012	157,500	<4300	7500	150000	<860
	1/31/2012	78,000	<7000	16000	62000	<1400
	2/14/2012	140,250	<14000	<8900	140000	250
	3/1/2012	145,000	<4700	15000	130000	<930
	3/12/2012	138,100	<7000	8100	130000	<1400
	3/28/2012	31,600	<940	3600	28000	<190
lab rerun	3/28/2012	33,567	<240	4500	29000	67
	4/11/2012	25,697	<550	3600	22000	97
	4/24/2012	11,300	<290	1800	9400	100
	5/8/2012	820	<350	<220	820	<69
lab rerun	5/8/2012	864	16	<86	830	18
	5/22/2012	1,759	<300	<180	1700	59
	6/5/2012	5,837	<610	870	4900	67
	6/19/2012	99	<60	<37	84	15
	7/3/2012	157	<240	<150	130	27
F3	7/6/2011	1,117	<44	<28	1100	17
	9/15/2011	6,579,000	<260000	26000	6,500,000	53000
	9/30/2011	2,041,600	<47000	32000	2,000,000	9600
	10/14/2011	665,020	2400	52,000	610,000	620
	10/28/2011	776,340	4900	81,000	690,000	440
dupe	10/28/2011	783,300	3900	99,000	680,000	400
	11/8/2011	292,000	<11000	12,000	280,000	<2100
	11/22/2011	166,170	<5200	6,100	160,000	70
	12/6/2011	430,910	2800	38,000	390,000	110
	12/21/2011	101,000	<3600	17,000	84,000	<720
	1/5/2012	57,740	640	2,100	55,000	<450
	1/18/2012	57,200	<1400	3,200	54,000	<270
	1/31/2012	18,290	<2400	8,800	9,000	490
	2/14/2012	1,330	26	<87	1,300	4.2
dupe	2/14/2012	1,349	37	<180	1,300	12
	3/8/2012	20,448	48	1,400	19,000	<110
	3/12/2012	92,900	<3500	2,900	90,000	<700
	3/28/2012	4,200	<560	1,000	3,200	<110

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	4/24/2012	38	<29	11	25	1.7
	5/8/2012	17	<28	4.3	13	<5.6
	5/22/2012	74	<30	16.0	52	5.9
	6/5/2012	27	<30	7.2	20	<5.9
	6/19/2012	40	<30	18.0	20	2.3
	7/3/2012	17	<29	4.2	11	2.1
F4	7/6/2011	39,000	<450	<280	39000	<90
	9/15/2011	1,847,000	<52000	20000	1800000	27000
	9/30/2011	583,800	1400	37000	540000	5400
	10/14/2011	158,740	1400	17000	140000	340
	10/27/2011	32,910	480	1400	31000	30
	11/8/2011	12,470	370	2100	10000	<68
	11/22/2011	29,350	250	4100	25000	<250
	12/6/2011	81,738	1700	16000	64000	38
	12/21/2011	18,800	<950	4800	14000	<190
	1/5/2012	12,140	520	620	11000	<57
	1/18/2012	5,408	28	180	5200	<27
	1/31/2012	3,662	56	2000	1600	6
	2/14/2012	14,245	190	<870	14000	55
	3/1/2012	9,025	<270	1,800	7,200	25
	3/12/2012	13,329	<620	1,300	12,000	29
	3/27/2012	7,242	<1100	1,400	5,800	42
	4/24/2012	145	7.1	24	110	3.5
	5/8/2012	18	<30	6	12	<6
	5/22/2012	1,514	<150	<92	1,500	14
	6/5/2012	124	<29	24	100	<5.8
	6/19/2012	559	<59	95	460	4.4
	7/3/2012	11	<29	4.1	7.1	<5.7
F12	12/8/2011	3,915	37	770	3100	8
	12/19/2011	3,108	<70	1700	1400	7.7
	1/5/2012	3,235	<150	2400	830	4.8
	1/18/2012	1,668	16	910	740	1.5
	2/2/2012	242	<100	130	110	2.4
	2/16/2012	1,016	<98	530	480	6.4
	2/28/2012	1,525	<46	570	950	5.3
	3/12/2012	1,670	3.8	560	1100	5.7
dupe	3/12/2012	2,210	4.8	1100	1100	5.2
	3/28/2012	3,222	11	1300	1900	11
	5/1/2012	430	11	84	330	4.9
	5/15/2012	785	<57	<35	770	15
	5/30/2012	455	<28	110	340	5
	6/12/2012	217	<120	<73	210	7
	6/26/2012	320	<27	<17	320	<5.4
	7/10/2012	911	<48	340	560	11
	7/24/2012	1,070	<28	460	600	10
	8/7/2012	1,059	<100	390	660	9
	8/21/2012	626	<42	280	340	6.4
	9/4/2012	355	<42	230	120	4.6

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	9/18/2012	958	<40	<25	910	48
	10/2/2012	238	<42	<26	230	8.1
F13	12/19/2011	1,062	<44	680	380	2.4
	1/5/2012	940	<290	680	260	<58
	1/18/2012	1,065	14	400	650	0.93
	2/2/2012	285	<180	200	85	<35
	2/16/2012	240	<68	110	130	<13
	2/28/2012	313	<44	160	150	3.1
	3/12/2012	645	12	240	390	2.6
	3/28/2012	2,580	<260	280	2300	<52
	5/1/2012	304	5.8	74	220	4.6
	5/15/2012	205	<28	62	140	3.2
	5/30/2012	167	<28	37	130	<5.6
	6/12/2012	161	<42	21	140	<8.3
	6/26/2012	3,300	<140	200	3100	<28
	7/10/2012	5,850	<250	150	5700	<50
	7/24/2012	3,430	<120	130	3300	<24
	8/7/2012	3,520	<120	120	3400	<24
	8/21/2012	2,076	<140	76	2000	<27
lab rerun	8/21/2012	2,699	<43	99	2600	<8.6
	9/4/2012	2,691	<140	91	2600	<27
	9/18/2012	2,500	<87	<54	2500	<17
	10/2/2012	6,400	<280	<170	6400	<55
G2	1/26/2012	9,761	32	320	9400	9.2
	3/2/2012	5,544	740	700	4100	3.8
	3/15/2012	14,226	26	1200	13000	<70
	3/28/2012	11,845	18	1800	10000	27
	4/11/2012	14,669	47	1600	13000	22
	4/11/2012	13,359	36	1300	12000	23
	4/24/2012	28,890	<950	1800	27000	90
	4/24/2012	32,300	<380	2200	30000	100
	5/8/2012	13,247	<590	2200	11000	47
	5/22/2012	9,947	<280	2100	7800	47
	6/5/2012	12,145	<280	2600	9500	45
	6/19/2012	10,281	<300	2400	7800	81
	7/3/2012	8,432	<200	2300	6100	32
	7/17/2012	6,628	<350	2300	4300	28
	7/31/2012	8,023	<200	1800	6200	23
	8/14/2012	3,700	<120	1200	2500	<24
	8/28/2012	4,824	<130	2200	2600	24
	9/11/2012	356	8.9	230	110	7.4
	9/24/2012	221	<43	170	48	3.3
G3	1/26/2012	1,192	16	74	1100	1.8
	3/2/2012	53,110	17000	18000	18000	110
	3/15/2012	53,550	750	6800	46000	<280
	3/28/2012	4,203	260	830	3100	13
	4/11/2012	2,385	200	380	1800	4.7
	4/24/2012	8,145	100	2000	6000	45

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	5/8/2012	18,074	<730	2000	16000	74
	5/22/2012	1,095	<300	370	700	25
	6/5/2012	1,462	<280	570	870	22
	6/19/2012	440	<630	200	240	<120
	7/3/2012	1,620	<490	520	1100	<98
	7/17/2012	1,240	<350	470	750	20
	7/31/2012	1,400	<400	480	920	<79
	8/16/2012	620	<970	320	300	<190
	8/28/2012	890	<400	410	480	<81
	9/11/2012	105	<42	59	39	6.8
G4	1/26/2012	6,081,000	<150000	81000	6000000	<31000
lab rerun	1/26/2012	6,501,200	<70000	100000	6400000	1200
	3/2/2012	240,110	4500	25000	210000	610
	3/12/2012	47,030	160	4600	42000	270
	3/28/2012	49,830	130	4400	45000	300
dupe	3/28/2012	53,300	170	4800	48000	330
	4/11/2012	32,079	69	3900	28000	110
	4/24/2012	28,925	44	6800	22000	81
	5/8/2012	19,900	<1700	1900	18000	<340
	5/22/2012	13,904	<730	850	13000	54
	6/5/2012	3,820	<88	900	2900	20
	6/19/2012	216	<29	<18	200	16
	7/3/2012	2,691	<42	2200	460	31
	7/17/2012	57	<27	<17	46	11
	7/31/2012	75	<29	<18	65	9.6
	8/14/2012	476	<82	<51	430	46
	8/28/2012	22	<58	<36	15	6.7
	9/11/2012	30	8.1	<26	17	4.6
G5	1/26/2012	1,061,100	<70000	100000	960000	1100
	3/12/2012	11,059	190	1200	9600	69
	3/28/2012	6,353	85	900	5300	68
	4/11/2012	4,705	43	620	4000	42
	4/24/2012	888	<530	190	670	28
dupe	4/24/2012	1,303	<530	180	1100	23
	5/8/2012	6,314	<210	880	5400	34
	5/22/2012	799	<61	91	690	18
	6/5/2012	692	<29	180	490	22
	6/19/2012	100	<29	<18	93	6.9
	7/3/2012	678	<350	<220	610	68
	7/17/2012	111	<28	42	60	8.6
	7/31/2012	333	<1000	<650	260	73
	8/14/2012	129	<200	<120	110	19
	8/28/2012	21	<87	13	7.6	<17
	9/11/2012	30	<120	<75	30	<24
G6	1/19/2012	11,370	<280	2,300	8,800	270
	3/2/2012	4,812	1,100	1,300	2,400	12
	3/23/2012	1,474	25	340	1,100	9

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	4/11/2012	1,189	30	280	870	9
	4/24/2012	424	<160	74	350	<32
	5/10/2012	4,450	<140	50	4,400	<28
dupe	5/10/2012	5,464	<140	64	5,400	<28
	5/22/2012	79	<29	10	67	2
	6/5/2012	104	<28	31	70	2.8
	6/19/2012	35	<28	6.7	25	3.0
	7/3/2012	62	<36	<23	55	6.8
	7/17/2012	35	<56	11.0	20	4.2
	7/31/2012	324	<64	160.0	160	3.5
	8/14/2012	77	<68	60.0	17	<14
	8/28/2012	14	<49	<31	11	3.2
	9/11/2012	31	<42	<26	31	<8.4
G7	1/19/2012	19,700	<560	3,300	15,000	1,400
	3/7/2012	10,363	190	1,100	9,000	73
	3/23/2012	1,249	11	220	1,000	18
	4/11/2012	1,802	8	170	1,600	24
	4/24/2012	2,401	<70	180	2,200	21
lab rerun	4/24/2012	2,546	4	220	2,300	22
	5/10/2012	22,350	<800	640	21,000	710
	5/22/2012	980	<28	46	930	4.2
	6/5/2012	1,107	<47	100	1,000	7.2
	6/19/2012	1,286	<47	80	1,200	5.5
	7/3/2012	1,746	<59	140	1,600	5.8
	7/17/2012	4,600	<170	100	4,500	<34
	7/31/2012	1,034	<33	140	890	3.7
	8/14/2012	240	<62	120	120	<12
	8/28/2012	80	<42	57	23	<8.4
	9/11/2012	32	<42	11	17	4.2
G8	1/19/2012	849,200	<18000	28,000	820,000	1,200
lab rerun	1/19/2012	651,100	<2200	30,000	620,000	1,100
	3/7/2012	251,450	<11000	11,000	240,000	450
	3/23/2012	1,563	9	350	1,200	4
	4/17/2012	1,164	<40	570	590	4
	5/1/2012	137	4	46	85	3
	5/15/2012	90	<29	32	56	2
	5/30/2012	682	<29	130	550	2
dupe	5/30/2012	600	<68	120	480	<13
	6/12/2012	58	<36	20	38	<7.3
	6/26/2012	1,290	<35	320	970	<7
	7/10/2012	5,400	<180	1,300	4,100	<36
	7/24/2012	2,094	<51	590	1,500	4
	8/7/2012	2,250	<290	1,700	550	<57
	8/21/2012	1,141	<42	41	1,100	<8.4
	9/4/2012	150	<42	20	130	<8.4
G9	1/19/2012	105,790	<2800	7,600	98,000	190
	1/19/2012	104,200	<560	9,000	95,000	200

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	3/7/2012	35,697	63	1,600	34,000	34
	3/23/2012	12,560	<260	560	12,000	<53
	4/17/2012	99,600	<2400	8,500	91,000	100
dupe	4/17/2012	103,283	<2900	9,200	94,000	83
	5/1/2012	41,700	<1200	7,700	34,000	<230
	5/15/2012	97,100	<2900	8,100	89,000	<580
	5/30/2012	69,300	<3600	7,300	62,000	<710
	6/12/2012	39,740	<1500	7,600	32,000	140
	6/26/2012	68,000	<9500	10,000	58,000	<1900
	7/10/2012	74,000	<2900	10,000	64,000	<580
	7/24/2012	33,900	<960	6,900	27,000	<190
dupe	7/24/2012	34,800	<950	6,800	28,000	<190
	8/7/2012	6,409	<100	4,200	2,200	9
	8/21/2012	371	<43	41	330	<8.6
	9/4/2012	780	<43	630	150	<8.6
	9/20/2012	776	<40	720	56	<8.1
	10/2/2012	1,140	<42	200	940	<8.4
G10	1/26/2012	314,760	<28000	74,000	240,000	760
	3/12/2012	23,446	<560	4,400	19,000	46
lab rerun	3/12/2012	20,470	28	4,400	16,000	42
dupe	3/12/2012	19,442	<700	3,400	16,000	42
	3/28/2012	13,870	35	1,800	12,000	35
	5/1/2012	41,239	<1200	5,200	36,000	39
	5/15/2012	21,800	<690	1,800	20,000	<140
	5/30/2012	21,900	<1200	1,900	20,000	<230
	6/12/2012	13,800	<480	1,800	12,000	<95
	6/26/2012	24,400	<1100	3,400	21,000	<220
	7/10/2012	340	<84	160	180	<16
dupe	7/10/2012	300	<78	130	170	<16
	7/24/2012	1,903	<51	400	1,500	3.1
	8/7/2012	1,520	<36	690	830	<7.2
	8/21/2012	850	<42	460	390	<8.4
	9/4/2012	373	<42	310	63	<8.3
	9/18/2012	470	<41	110	360	<8.2
	10/2/2012	495	<42	240	250	4.9
G11	1/26/2012	230,440	<10000	30,000	200,000	440
	3/12/2012	69,110	<2300	13,000	56,000	110
	3/28/2012	13,600	<2900	2,600	11,000	<580
lab rerun	3/28/2012	13,554	<980	2,500	11,000	54
dupe	3/28/2012	13,800	<2400	2,800	11,000	<470
lab rerun	3/28/2012	13,741	<980	2,700	11,000	41
	4/17/2012	6,692	<200	870	5,800	22
	5/1/2012	4,633	<150	920	3,700	13
	5/15/2012	3,040	<120	640	2,400	<24
	5/30/2012	3,178	<120	570	2,600	7.7
	6/12/2012	3,052	<140	840	2,200	12.0
	6/26/2012	408	<28	190	210	7.8
dupe	6/26/2012	648	<28	210	430	7.8

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	7/10/2012	10,721	<320	2,400	8,300	21.0
	7/24/2012	177	<29	48	120	9.1
	8/7/2012	434	<36	290	140	4.2
	8/21/2012	920	<42	500	420	<8.4
	9/4/2012	62	<44	44	14	4.4
	9/18/2012	158	<42	53	99	6.1
	10/2/2012	149	<43	85	64	<8.6
G12	1/26/2012	85,140	<7200	19000	66000	140
	3/12/2012	34,755	<1200	5700	29000	55
	3/28/2012	85,150	<2100	12000	73000	150
	4/17/2012	5,941	<120	1700	4200	41
	5/1/2012	960	<1400	<910	960	<290
dupe	5/1/2012	880	<1400	<900	880	<290
	5/15/2012	3,043	<110	630	2400	13
	5/30/2012	1,130	<150	490	630	10
	6/12/2012	1,193	<190	430	740	23
	6/26/2012	5,614	<200	1200	4400	14
	7/10/2012	2,278	<200	560	1700	18
	7/24/2012	214	<29	42	170	2.2
	8/7/2012	195	<53	94	96	4.6
	8/21/2012	277	<42	180	93	3.5
	9/4/2012	104	<42	50	50	3.8
	9/18/2012	183	<87	47	130	5.6
	10/2/2012	201	<43	86	110	4.6
G13	1/26/2012	48,700	<2400	8700	40000	<470
	3/12/2012	4,460	<120	850	3600	10
	3/28/2012	10,600	<1100	1900	8700	<210
	4/17/2012	1,250	<550	320	930	<110
	5/1/2012	1,870	<1400	370	1500	<290
	5/15/2012	900	<58	220	680	<11
	5/30/2012	1,000	<240	100	900	<48
	6/12/2012	2,290	<120	90	2200	<25
	6/26/2012	2,710	<140	510	2200	<28
	7/10/2012	9,257	<490	810	8400	47
	7/24/2012	12,812	<360	770	12000	42
	8/9/2012	9,242	<360	1100	8100	42
dupe	8/9/2012	9,241	<360	1100	8100	41
	8/21/2012	5,380	<180	940	4400	40
	9/4/2012	506	<76	170	330	6.2
	9/18/2012	285	<89	65	220	<18
	10/2/2012	2,499	<180	670	1800	29
H3	1/26/2012	59,000	<5800	10000	49000	<1100
	3/7/2012	3,447,900	12000	31000	3400000	4900
	3/30/2012	77,830	220	2500	75000	110
	4/24/2012	456,160	<15000	5700	450000	460
lab rerun	4/24/2012	438,420	530	7600	430000	290
dupe	4/24/2012	499,040	<15000	8500	490000	540
lab rerun	4/24/2012	410,140	460	9400	400000	280

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	5/10/2012	204,880	<8100	4400	200000	480
	5/22/2012	288,400	<7200	8400	280000	<1400
lab rerun	5/22/2012	292,400	<3600	12000	280000	400
	6/7/2012	33,200	<2000	2200	31000	<400
	6/19/2012	15,951	<360	1900	14000	51
	7/3/2012	32,200	<1400	1200	31000	<280
	7/17/2012	13,900	<460	900	13000	<92
	8/2/2012	13,132	<560	1100	12000	32
dupe	8/2/2012	13,100	<560	1100	12000	<110
	8/14/2012	46,800	<1600	3800	43000	<310
	8/28/2012	4,520	<150	620	3900	<30
	9/11/2012	2,700	<84	390	2300	9.5
	9/24/2012	724	<43	190	530	4.1
dupe	9/24/2012	664	<43	190	470	4.2
H4	4/5/2012	745,800	<17000	4800	730000	11000
	4/24/2012	251,900	<6300	9800	240000	2100
	5/10/2012	248,900	<12000	7800	240000	1100
	5/22/2012	186,300	<3600	5300	180000	1000
	6/7/2012	45,600	<2800	5300	40000	300
	6/19/2012	16,350	<700	2200	14000	150
dupe	6/19/2012	18,790	<470	2600	16000	190
	7/3/2012	21,590	<570	3400	18000	190
	7/17/2012	7,360	<140	1800	5400	160
	7/31/2012	4,340	<110	1100	3100	140
	8/14/2012	6,832	<200	1600	5200	32
	8/28/2012	700	<230	<140	700	<46
	9/11/2012	95	<43	41	48	6
dupe	9/11/2012	90	<43	37	47	6.1
	9/24/2012	109	<42	60	43	5.8
H5	3/7/2012	7,568	88	160	7300	20
	3/30/2012	5,561	29	590	4900	42
	4/24/2012	69,400	<1600	2400	65000	2000
	5/10/2012	158,100	<4900	2500	150000	5600
dupe	5/10/2012	168,700	<4800	2600	160000	6100
	5/22/2012	122,800	<5800	1600	120000	1200
lab rerun	5/22/2012	185,000	<3600	2500	180000	2500
	6/7/2012	116,950	<3100	6200	110000	750
	6/19/2012	52,660	<2000	5900	46000	760
	7/3/2012	17,840	<480	4500	13000	340
	7/17/2012	3,984	34	920	2900	130
	7/31/2012	2,433	83	920	1300	130
	8/14/2012	3,353	49	860	2400	44
	8/28/2012	466	<240	200	250	16
	9/11/2012	124	<41	26	94	4.1
	9/24/2012	55	<42	27	23	5.2
H6	4/5/2012	26,740	<560	420	26000	320
	4/24/2012	4,977	17	450	4400	110

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	5/10/2012	28,310	<720	2200	26000	110
	5/22/2012	21,630	<550	1300	20000	330
	6/5/2012	22,210	<760	720	21000	490
dupe	6/5/2012	52,300	<2300	2000	49000	1300
lab rerun	6/5/2012	56,460	160	2500	52000	1800
	6/19/2012	11,000	<360	1800	9000	200
	7/3/2012	4,678	<710	1200	3400	78
	7/17/2012	912	<370	250	610	52
	7/31/2012	827	<690	330	420	77
	8/14/2012	3,570	<690	970	2600	<140
	8/28/2012	116	<230	68	48	<46
	9/11/2012	110	<160	<99	110	<32
	9/24/2012	32	<110	22	10	<21
H7	1/26/2012	38,100	<7000	9100	29000	<1400
	3/7/2012	18,843	80	720	18000	43
	4/24/2012	4,129	13	270	3800	46
	5/10/2012	7,135	<280	600	6500	35
	5/22/2012	12,545	<580	460	12000	85
dupe	5/22/2012	13,522	<590	440	13000	82
	6/7/2012	7,660	<240	520	7100	40
	6/19/2012	1,037	11	190	820	16
	7/5/2012	370	<28	20	350	<5.6
	7/17/2012	1,434	<54	34	1400	<11
	7/31/2012	579	<30	37	540	2.1
	8/14/2012	220	<110	<70	220	<22
	8/28/2012	66	<110	37	29	<23
	9/11/2012	11	<42	7.4	3.6	<8.3
	9/24/2012	18	<61	16	2	<12
H8	4/11/2012	3,885	<81	460	3400	25
	4/24/2012	17,446	<470	400	17000	46
	5/10/2012	23,181	120	970	22000	91
	5/22/2012	11,540	<360	440	11000	100
	6/7/2012	18,360	<720	310	18000	50
	6/19/2012	24,460	<1400	460	24000	<280
	7/5/2012	11,640	<690	640	11000	<140
	7/17/2012	69,900	<2300	4900	65000	<450
	7/31/2012	8,714	<240	2200	6500	14
	8/16/2012	1,193	<60	600	590	3.4
dupe	8/16/2012	782	<28	400	380	2.1
	8/28/2012	207	<56	160	47	<11
	9/11/2012	15	<42	7.7	7.2	<8.3
	9/24/2012	18	<42	14	4.3	<8.3
H9	3/7/2012	24,269	390	840	23000	39
	4/17/2012	56,670	<1400	670	56000	<290
	5/1/2012	274,400	<12000	4000	270000	400
	5/15/2012	242,000	<9000	2000	240000	<1800
	5/30/2012	58,100	<2900	1100	57000	<570

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	6/12/2012	88,400	<3000	1400	87000	<600
dupe	6/12/2012	85,400	<3000	1400	84000	<600
	6/26/2012	9,290	<350	490	8800	<70
	7/10/2012	4,107	<200	390	3700	17
	7/24/2012	22,400	<560	4400	18000	<110
	8/7/2012	8,500	<180	4400	4100	<35
	8/21/2012	61,400	<2800	54000	7400	<560
	9/4/2012	6,800	<1500	5700	1100	<300
dupe	9/4/2012	7,100	<1500	5900	1200	<300
	9/18/2012	891	<170	490	380	21
	10/2/2012	697	<88	580	110	6.8
H10	3/30/2012	1,452	23	220	1200	9.4
	4/17/2012	88,120	<2100	13000	75000	120
	5/1/2012	150,200	<6100	20000	130000	200
	5/15/2012	41,570	<1300	570	41000	<260
dupe	5/15/2012	37,450	<960	450	37000	<190
lab rerun	5/15/2012	38,560	<480	560	38000	<95
	5/30/2012	18,950	<900	950	18000	<180
	6/12/2012	117,900	<5000	7900	110000	<990
	6/26/2012	44,000	<1400	13000	31000	<280
	7/10/2012	44,000	<1800	2000	42000	<360
	7/24/2012	22,380	<720	380	22000	<140
	8/9/2012	90,000	<1500	53000	37000	<290
dupe	8/9/2012	89,000	<1600	52000	37000	<320
	8/21/2012	10,600	<180	6200	4400	<36
	9/4/2012	2,284	<430	2200	84	<86
	9/18/2012	3,590	<850	3300	290	<170
dupe	9/18/2012	3,460	<1100	3200	260	<210
	10/2/2012	452	<87	420	32	<17
H11	1/26/2012	16,758	<2800	3700	13000	58
	3/8/2012	639	6.2	200	430	2.4
	3/30/2012	1,369	22	140	1200	7.3
	4/17/2012	10,385	<290	870	9500	15
dupe	4/17/2012	11,936	<290	920	11000	16
	5/3/2012	14,180	<360	180	14000	<71
	5/15/2012	79,800	<2400	1800	78000	<480
	5/30/2012	9,610	<570	410	9200	<110
	6/12/2012	25,800	<920	3800	22000	<180
	6/26/2012	49,300	<1800	5300	44000	<360
	7/10/2012	2	<28	<18	2.2	<5.6
dupe	7/10/2012	1,170	<68	210	960	<14
	7/24/2012	5,140	<160	540	4600	<31
	8/7/2012	1,693	<28	960	730	3.4
	8/21/2012	1,114	<43	600	510	3.7
dupe	8/21/2012	1,084	<43	580	500	3.7
	9/4/2012	352	<43	330	22	<8.6
	9/18/2012	276	<42	240	34	2.4
	10/2/2012	179	<42	160	19	<8.4

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
H12	4/5/2012	23,392	<1400	320	23000	72
	4/17/2012	61,300	<1400	5200	56000	100
	5/1/2012	1,540	<1000	140	1400	<200
dupe	5/1/2012	1,550	<1000	150	1400	<200
	5/15/2012	23,880	<780	880	23000	<160
	5/30/2012	25,100	<1100	1100	24000	<220
	6/12/2012	3,589	<300	570	3000	19
	6/26/2012	16,000	<690	2000	14000	<140
	7/10/2012	7,299	<280	680	6600	19
	7/24/2012	3,655	<99	840	2800	15
dupe	7/24/2012	4,116	<110	1000	3100	16
	8/7/2012	2,151	<47	940	1200	11
	8/21/2012	3,108	<87	2100	1000	8.3
	9/4/2012	225	<42	180	45	<8.4
	9/18/2012	167	<40	91	72	4.4
	10/2/2012	100	<41	68	28	4.2
H13	1/26/2012	12,017	<560	4400	7600	17
	3/8/2012	172	13	58	100	0.98
	4/17/2012	8,265	<500	850	7400	15
	5/1/2012	2,210	<1000	210	2000	<210
	5/15/2012	9,890	<370	690	9200	<73
	5/30/2012	5,810	<400	610	5200	<81
	6/12/2012	2,148	<100	340	1800	8.3
	6/26/2012	13,900	<480	1900	12000	<95
	7/10/2012	2,609	<140	600	2000	8.9
	7/24/2012	5,140	<160	740	4400	<31
	8/7/2012	2,845	<83	740	2100	5.4
	8/21/2012	3,105	<88	1100	2000	5
	9/4/2012	3,000	<440	1000	2000	<88
	9/18/2012	1,360	<95	260	1100	<19
	10/2/2012	220	<45	110	110	<9
dupe	10/2/2012	230	<45	100	130	<8.9
I4	4/19/2012	433,000	<29000	<18000	430000	3000
lab rerun	4/19/2012	505,800	<9800	2100	500000	3700
	5/10/2012	102,600	<5600	1400	100000	1200
	5/23/2012	60,150	<1800	1300	58000	850
	6/7/2012	114,000	<4500	2500	110000	1500
dupe	6/7/2012	124,300	<4500	2700	120000	1600
	6/21/2012	311,100	<9400	8300	300000	2800
	7/5/2012	212,790	<9400	12000	200000	790
	7/17/2012	46,940	<1500	6600	40000	340
	7/31/2012	47,230	<1600	5000	42000	230
	8/14/2012	41,520	<820	3400	38000	120
	8/28/2012	12,755	<420	1700	11000	55
dupe	8/28/2012	12,654	<420	1600	11000	54
	9/11/2012	3,995	30	540	3400	25
	9/24/2012	3,946	<150	330	3600	16

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
I5	4/5/2012	52,430	<1400	510	51000	920
	4/11/2012	614	2	85	520	6.5
	5/10/2012	207,000	<4600	2100	200000	4900
	5/23/2012	733,000	<24000	<15000	720000	13000
lab rerun	5/23/2012	692,000	<7100	2000	670000	20000
	6/7/2012	55,700	<1900	1300	52000	2400
	6/21/2012	103,400	<5400	1700	98000	3700
	7/5/2012	119,400	<5600	7300	110000	2100
dupe	7/5/2012	118,400	<5600	6800	110000	1600
	7/19/2012	6,764	<230	340	6400	24
	7/31/2012	9,550	<290	500	9000	50
	8/14/2012	4,674	<110	740	3900	34
	8/30/2012	2,200	<160	1000	1200	<32
	9/11/2012	420	<64	200	220	<13
	9/24/2012	1,180	<290	380	800	<57
I6	4/5/2012	3,420	20	120	3200	80
	4/11/2012	197	<29	35	160	2.2
	5/10/2012	34,920	<1400	980	33000	940
	5/23/2012	4,400	<200	100	4100	200
dupe	5/23/2012	4,099	<110	99	3800	200
	6/7/2012	15,680	<590	700	14000	980
	6/21/2012	23,320	<1100	650	22000	670
	7/5/2012	61,000	<3500	3000	58000	<700
	7/19/2012	13,950	<470	910	13000	40
	7/31/2012	4,746	<150	230	4500	16
	8/14/2012	2,361	<61	150	2200	11
	8/30/2012	1,200	<89	460	730	10
	9/13/2012	137	<42	96	41	<8.3
	9/24/2012	89	<42	60	29	<8.4
I7	4/5/2012	712	8.1	45	630	29
	4/11/2012	98	<29	37	58	2.5
	5/10/2012	13,329	69	690	12000	570
	5/23/2012	89,400	<4500	<2800	87000	2400
	6/7/2012	3,771	<98	130	3600	41
	6/21/2012	9,603	<350	270	9300	33
dupe	6/21/2012	8,738	<270	220	8500	18
	7/5/2012	19,820	<940	820	19000	<190
	7/19/2012	13,320	<480	320	13000	<95
	8/2/2012	5,583	<180	83	5500	<35
	8/14/2012	5,540	<160	240	5300	<32
	8/30/2012	1,586	<110	480	1100	6.3
	9/13/2012	198	<42	180	18	<8.3
	9/24/2012	135	<42	110	25	<8.4
I8	4/19/2012	2,398	<60	66	2300	32
	4/19/2012	2,508	<29	70	2400	38
	5/10/2012	88,490	<2800	2800	85000	690
	5/23/2012	23,940	<1200	440	23000	500

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	6/7/2012	82,480	<2900	1600	80000	880
	6/21/2012	61,290	<3500	860	60000	430
	7/5/2012	70,470	<3500	1200	69000	270
	7/19/2012	175,300	<7000	4800	170000	500
dupe	7/19/2012	174,850	<7000	4400	170000	450
	8/2/2012	19,052	<870	1000	18000	52
	8/14/2012	123,000	<2900	13000	110000	<580
	8/30/2012	36,000	<710	14000	22000	<140
	9/13/2012	1,134	<42	800	330	3.5
	9/24/2012	915	<43	760	150	5
I9	4/5/2012	8,650	<270	140	8500	10
lab rerun	4/5/2012	9,165	5.8	150	9000	9.5
	5/3/2012	1,014,000	<35000	14000	1000000	<7000
	5/17/2012	10,196	<380	180	10000	16
	5/31/2012	72,000	<2900	1000	71000	<570
	6/14/2012	76,950	<4600	950	76000	<910
dupe	6/14/2012	76,990	<4500	990	76000	<900
	6/28/2012	100,500	<3500	2200	98000	300
dupe	6/28/2012	102,380	<3600	2100	100000	280
	7/12/2012	95,200	<4200	2200	93000	<830
	7/24/2012	58,410	<1600	4300	54000	110
	8/7/2012	20,238	<580	5200	15000	38
	8/23/2012	9,900	<470	4800	5100	<94
	9/6/2012	1,833	<42	1400	430	3.1
dupe	9/6/2012	1,823	<42	1400	420	3.2
	9/18/2012	320	<42	270	50	<8.3
	10/2/2012	113	<43	100	13	<8.6
I10	4/5/2012	9,386	<290	350	9000	36
	5/3/2012	167,600	<8800	7600	160000	<1800
	5/17/2012	43,020	<1900	860	42000	160
	5/31/2012	52,800	<2400	1800	51000	<480
dupe	5/31/2012	41,400	<1800	1400	40000	<360
	6/14/2012	44,500	<2400	1500	43000	<470
	6/28/2012	62,800	<2900	2800	60000	<570
	7/12/2012	31,200	<1200	2200	29000	<230
lab rerun	7/12/2012	31,641	<150	2600	29000	41
	7/26/2012	13,800	<350	4000	9800	<69
	8/7/2012	20,500	<360	11000	9500	<71
	8/21/2012	2,390	<180	1700	690	<36
dupe	8/21/2012	2,390	<140	1700	690	<29
	9/6/2012	550	<40	490	60	<8
	9/18/2012	1,620	<130	1500	120	<26
	10/2/2012	222	<42	210	12	<8.4
I11	4/5/2012	2,614	<72	200	2400	14
	5/3/2012	5,731	<180	510	5200	21
	5/17/2012	1,655	<52	49	1600	5.7
	5/31/2012	23,722	<720	680	23000	42

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	6/14/2012	14,500	<700	500	14000	<140
	6/28/2012	3,520	<140	220	3300	<28
	7/12/2012	18,200	<490	2200	16000	<97
	7/26/2012	5,200	<140	2000	3200	<28
dupe	7/26/2012	5,200	<140	2000	3200	<28
	8/7/2012	7,105	<90	5000	2100	5.4
	8/23/2012	6,900	<360	5100	1800	<72
	9/6/2012	2,110	<220	1800	310	<43
	9/20/2012	73	<44	16	57	<8.8
dupe	9/20/2012	37	<43	22	15	<8.6
	10/5/2012	19	<76	12	6.5	<15
I12	4/5/2012	3,505	<140	190	3300	15
lab rerun	4/5/2012	3,493	<81	180	3300	13
	5/3/2012	2,816	<120	300	2500	16
	5/17/2012	10,434	<470	410	10000	24
	5/31/2012	18,000	<580	950	17000	50
	6/14/2012	34,100	<1800	1100	33000	<350
	6/28/2012	1,900	<72	<45	1900	<14
	7/12/2012	11,770	<370	770	11000	<73
	7/26/2012	7,900	<350	1800	6100	<70
	8/7/2012	5,511	<120	2600	2900	11
	8/23/2012	4,720	<210	4100	620	<41
	9/6/2012	290	<85	250	40	<17
	9/18/2012	746	<270	660	86	<53
	10/5/2012	114	<260	78	36	<52
I13	4/5/2012	956	43	78	820	15
	5/3/2012	6,810	<350	210	6600	<70
	5/17/2012	4,981	<140	270	4700	11
	5/31/2012	8,098	<290	480	7600	18
	6/14/2012	12,691	<360	670	12000	21
	6/28/2012	6,900	<290	<180	6900	<58
	7/12/2012	3,480	<120	480	3000	<23
	7/26/2012	3,170	<88	670	2500	<18
	8/7/2012	3,105	<92	1000	2100	5.2
	8/23/2012	7,919	<270	3200	4700	19
	9/6/2012	2,418	<72	810	1600	8.2
	9/20/2012	12,683	<420	4400	8200	83
	10/5/2012	3,200	<540	1000	2200	<110
J5	3/15/2012	3,442	75	730	2600	37
	4/24/2012	5,246	16	300	4900	30
	5/10/2012	6,361	21	540	5500	300
	5/23/2012	11,730	<520	240	11000	490
	6/7/2012	15,570	<610	400	15000	170
	6/21/2012	36,380	<1700	710	35000	670
	7/5/2012	55,750	<2900	1200	54000	550
	7/19/2012	31,280	<1300	960	30000	320
	8/2/2012	17,120	<480	970	16000	150

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
lab rerun	8/2/2012	19,280	<360	1100	18000	180
	8/16/2012	36,520	<1600	2400	34000	120
	8/30/2012	25,710	<720	5600	20000	110
dupe	8/30/2012	24,189	<720	5100	19000	89
	9/13/2012	255	<43	190	65	<8.6
	9/27/2012	27	<43	13	14	<8.6
J6	4/19/2012	1,144	<50	24	1100	20
	5/10/2012	64,890	<2900	1700	63000	190
	5/23/2012	48,480	<2300	1200	47000	280
	6/7/2012	6,270	<190	430	5700	140
	6/21/2012	35,090	<1700	4500	30000	590
	7/5/2012	27,780	<1400	1600	26000	180
	7/19/2012	8,603	<320	750	7800	53
	8/2/2012	985	<30	96	880	9.3
	8/16/2012	394	<58	160	230	3.6
dupe	8/16/2012	400	<72	170	230	<14
	8/30/2012	6,210	<140	3300	2900	9.9
	9/13/2012	500	<43	120	380	<8.5
	9/27/2012	570	<78	130	440	<16
J7	3/15/2012	2,349	41	300	2000	7.8
	4/24/2012	501	3.8	31	460	6.4
	5/10/2012	7,932	<290	390	7500	42
	5/23/2012	7,265	<480	490	6700	75
	6/7/2012	3,933	<150	190	3700	43
	6/21/2012	28,700	<1200	2500	26000	200
	7/5/2012	25,120	<1400	980	24000	140
dupe	7/5/2012	25,300	<1400	970	24000	330
	7/19/2012	11,432	<400	410	11000	22
	8/2/2012	4,501	<150	290	4200	11
	8/16/2012	9,224	<350	1500	7700	24
	8/30/2012	3,400	<180	2400	1000	<35
	9/13/2012	37	<8.5	11	26	<8.5
	9/27/2012	180	<550	<340	180	<110
J8	4/19/2012	79,320	<3000	980	78000	340
	5/10/2012	7,761	<290	340	7400	21
	5/23/2012	161,500	<5100	1500	160000	<1000
	6/7/2012	11,620	<370	430	11000	190
dupe	6/7/2012	10,010	<370	350	9500	160
	6/21/2012	62,680	<2800	1500	61000	180
	7/5/2012	92,700	<5600	2700	90000	<1100
	7/19/2012	28,400	<1100	1400	27000	<220
	8/2/2012	22,200	<700	1200	21000	<140
dupe	8/2/2012	22,200	<700	1200	21000	<140
	8/16/2012	8,000	<310	1200	6800	<62
	8/30/2012	950	<120	750	200	<24
	9/13/2012	358	<8.5	310	48	<8.5
	9/27/2012	505	<270	490	15	<54

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
J9	1/26/2012	28,732	<930	5700	23000	32
	3/8/2012	136,300	<4500	6300	130000	<190
	4/24/2012	75,900	<2000	2800	73000	100
	5/10/2012	123,780	<3800	3600	120000	180
	5/23/2012	164,940	<4800	4600	160000	340
	6/7/2012	4,235	<180	310	3900	25
	6/21/2012	37,640	<2200	1500	36000	140
	7/5/2012	49,000	<2800	2000	47000	<550
	7/19/2012	55,810	<2000	4700	51000	110
dupe	7/19/2012	57,300	<2400	4300	53000	<470
	8/2/2012	59,000	<1800	11000	48000	<360
	8/16/2012	13,900	<480	3900	10000	<94
	8/30/2012	4,400	<84	2400	2000	<16
	9/13/2012	660	<92	370	290	<18
dupe	9/13/2012	690	<92	380	310	<18
	9/27/2012	460	<91	250	210	<18
	9/27/2012	450	<44	240	210	<8.7
J10	4/5/2012	361	17	37	300	7.4
	5/3/2012	13,441	<700	400	13000	41
	5/15/2012	4,209	<120	200	4000	9.3
dupe	5/15/2012	3,780	<210	180	3600	<42
	5/31/2012	1,154	<29	150	1000	4.1
	6/14/2012	1,243	<28	240	1000	3.2
	6/28/2012	810	<28	<18	810	<5.6
	7/12/2012	1,780	<63	680	1100	<12
	7/26/2012	12,300	<280	4500	7800	<55
	8/9/2012	640	<43	520	120	<8.6
	8/23/2012	537	<42	460	77	<8.3
	9/6/2012	640	<72	410	230	<14
	9/20/2012	1,551	<53	760	780	11
	10/5/2012	80	<43	23	57	<8.6
J11	1/26/2012	19,261	<580	4200	15000	61
	3/15/2012	35,781	340	3400	32000	41
	4/17/2012	16,745	<590	1700	15000	45
	5/3/2012	9,860	<350	560	9300	<70
dupe	5/3/2012	10,320	<350	620	9700	<70
	5/17/2012	1,700	<110	500	1200	<22
	5/31/2012	14,400	<5800	2400	12000	<1200
	6/14/2012	720	<240	150	570	<47
	6/28/2012	6,140	<200	<130	6000	140
	7/12/2012	8,634	<580	1100	7500	34
	7/26/2012	6,100	<460	2900	3200	<92
lab rerun	7/26/2012	5,517	<110	2600	2900	17
	8/9/2012	960	<280	440	520	<55
	8/23/2012	2,100	<1100	1300	800	<220
	9/6/2012	223	<40	180	43	<8
	9/20/2012	184	<42	100	84	<8.4

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	10/5/2012	27	<42	13	14	<8.3
J12	4/5/2012	2,600	<590	<370	2600	<120
	5/3/2012	6,950	<700	750	6200	<140
	5/17/2012	990	<1100	250	740	<220
	5/31/2012	5,400	<6100	<3800	5400	<1200
	6/14/2012	370	<180	70	300	<35
	6/28/2012	660	<290	<180	660	<57
	7/12/2012	511	<150	71	440	<29
	7/26/2012	14,100	<470	2100	12000	<94
	8/9/2012	7,812	<200	2200	5600	12
	8/23/2012	2,300	<82	1000	1300	<16
dupe	8/23/2012	2,300	<70	1000	1300	<14
	9/4/2012	1,210	<190	630	580	<38
dupe	9/4/2012	1,230	<190	650	580	<38
	9/6/2012	910	<130	490	420	<25
	9/20/2012	430	<76	250	180	<15
	10/5/2012	150	<90	90	60	<18
J13	1/26/2012	9,116	<350	3300	5800	16
	3/15/2012	46,290	150	17000	29000	140
	4/17/2012	4,250	<140	440	3800	10
	5/3/2012	1,486	<140	86	1400	<28
	5/17/2012	419	<190	79	340	<38
	5/31/2012	1,500	<5900	<3700	1500	<1200
	6/14/2012	666	<90	86	580	<18
	6/28/2012	1,400	<58	<36	1400	<12
	7/12/2012	1,290	<120	190	1100	<24
	7/26/2012	4,900	<140	1200	3700	<28
	8/9/2012	4,709	<130	1600	3100	8.7
	8/23/2012	8,500	<1100	3000	5500	<210
	9/6/2012	5,621	<240	1800	3800	21
	9/20/2012	3,028	<190	1400	1600	28
dupe	9/20/2012	3,426	<190	1600	1800	26
	10/5/2012	2,149	<92	540	1600	9.2
dupe	10/5/2012	2,270	<93	560	1700	9.7
K6	4/19/2012	8,760	<560	240	8500	20
	4/19/2012	7,869	<34	250	7600	19
	5/10/2012	3,863	<98	150	3700	13
	5/23/2012	4,359	<240	130	4200	29
dupe	5/23/2012	4,559	<260	130	4400	29
	6/7/2012	944	<43	100	830	14
	6/21/2012	10,763	<350	810	9900	53
	7/5/2012	9,457	<480	530	8900	27
	7/19/2012	2,488	<88	88	2400	<18
	8/2/2012	7,900	<280	1400	6500	<56
	8/16/2012	7,716	<220	2000	5700	16
	8/30/2012	7,456	<320	720	6700	36
dupe	8/30/2012	7,738	<320	800	6900	38

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	9/13/2012	994	<43	130	860	3.9
	9/27/2012	2,906	<88	400	2500	5.6
	9/27/2012	2,685	<42	380	2300	5.4
K7	4/19/2012	1,135	<30	29	1100	5.8
	5/10/2012	11,213	<290	190	11000	23
	5/24/2012	25,684	<720	620	25000	64
	6/7/2012	2,731	<120	120	2600	11
	6/21/2012	49,760	<2400	630	49000	130
	7/10/2012	63,000	<4800	1000	62000	<950
	7/19/2012	83,700	<2900	1700	82000	<570
	8/2/2012	19,685	<560	620	19000	65
dupe	8/2/2012	16,518	<560	470	16000	48
	8/16/2012	6,360	<240	860	5500	<47
	8/30/2012	8,400	<270	1700	6700	<54
	9/13/2012	1,280	<1100	280	1000	<220
	9/27/2012	4,800	<600	1500	3300	<120
dupe	9/27/2012	4,800	<600	1500	3300	<120
K8	4/19/2012	816	<30	14	800	2.2
	5/10/2012	11,142	<330	130	11000	12
	5/24/2012	48,000	<2000	<1300	48000	<410
	6/7/2012	54,380	<1700	380	54000	<330
	6/21/2012	29,520	<1200	520	29000	<230
dupe	6/21/2012	32,530	<1400	530	32000	<280
	7/5/2012	27,400	<1500	2400	25000	<290
	7/19/2012	34,950	<1400	950	34000	<280
	8/2/2012	9,240	<480	440	8800	<95
	8/21/2012	6,400	<160	3000	3400	<31
	8/30/2012	5,800	<190	1400	4400	<38
	9/18/2012	1,780	<96	280	1500	<19
	9/27/2012	1,407	<160	190	1200	17
K9	4/19/2012	39,422	<1900	390	39000	32
	4/19/2012	40,598	<600	570	40000	28
	5/10/2012	92,550	<3300	550	92000	<650
	5/24/2012	161,600	<7200	1600	160000	<1400
	6/7/2012	13,160	<490	160	13000	<97
	6/21/2012	17,463	<560	420	17000	43
	7/5/2012	17,350	<940	350	17000	<190
dupe	7/5/2012	17,370	<940	370	17000	<190
	7/19/2012	12,670	<480	670	12000	<95
	8/2/2012	5,540	<240	540	5000	<49
	8/16/2012	18,200	<750	3200	15000	<150
	8/30/2012	20,900	<740	3900	17000	<150
	9/13/2012	3,900	<4400	1000	2900	<880
dupe	9/13/2012	4,200	<1100	1100	3100	<220
	9/27/2012	3,600	<5700	1300	2300	<1100
	9/27/2012	3,300	<2300	1200	2100	<450

Frontier Fertilizer Stage 3

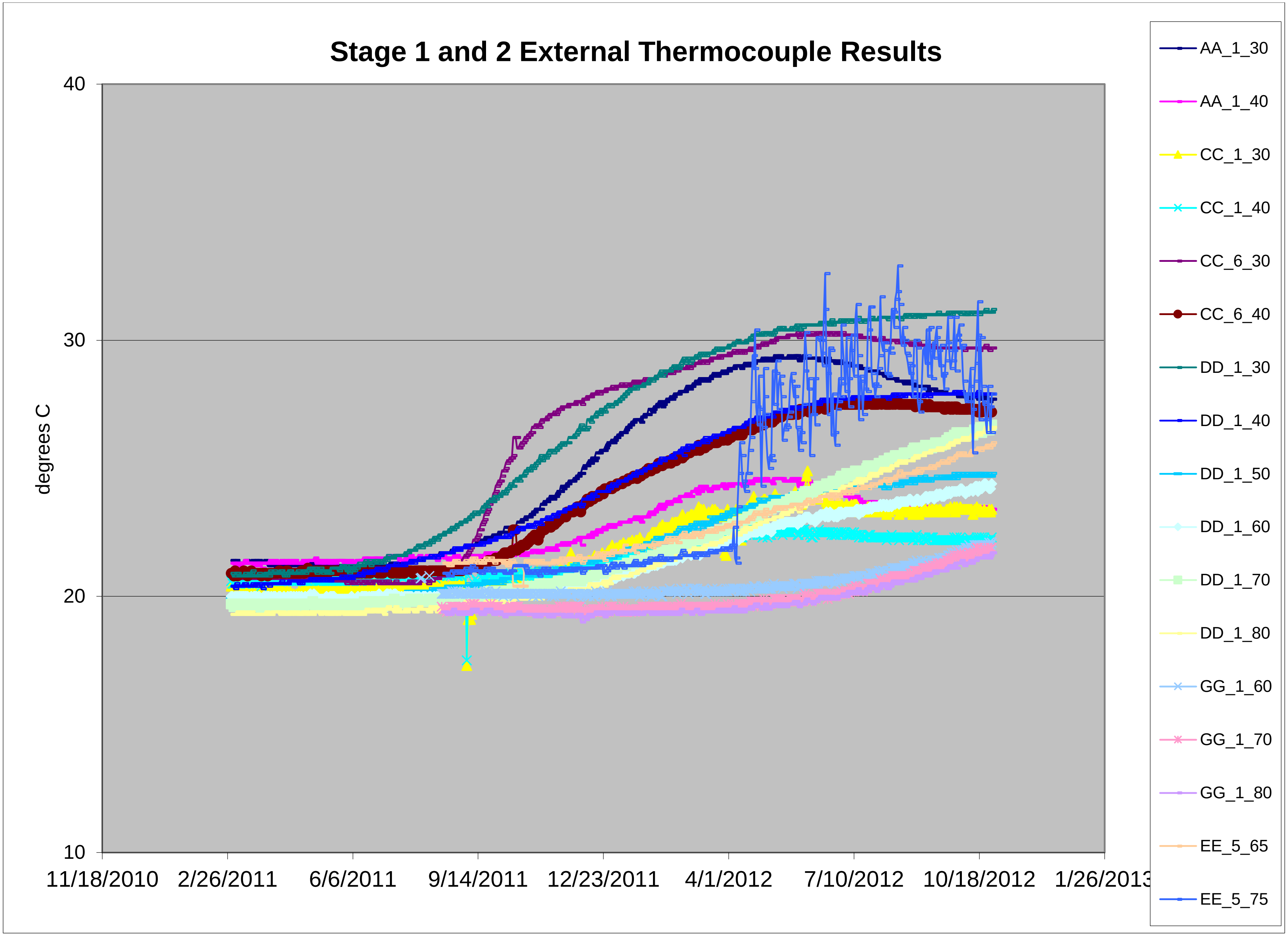
		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
K10	4/5/2012	2,614	5.5	200	2400	8.4
	4/17/2012	1,306	<42	100	1200	6.2
	5/3/2012	10,194	<470	560	9600	34
	5/17/2012	8,858	<380	340	8500	18
	5/31/2012	13,156	<360	1100	12000	56
dupe	5/31/2012	12,255	<360	1200	11000	55
	6/14/2012	7,581	<230	360	7200	21
	6/28/2012	5,400	<200	<130	5400	<41
	7/12/2012	19,843	<720	1800	18000	43
	7/26/2012	8,100	<240	1700	6400	<47
	8/9/2012	8,100	<150	4600	3500	<29
dupe	8/9/2012	14,800	<190	8900	5900	<38
	8/23/2012	3,100	<220	2100	1000	<43
	9/6/2012	1,390	<360	940	450	<71
	9/20/2012	390	<270	260	130	<5.3
	10/5/2012	84	<90	65	19	<18
K11	4/5/2012	1,879	<49	72	1800	6.7
	4/5/2012	1,894	2.9	85	1800	5.9
	5/3/2012	28,440	<1400	440	28000	<280
	5/17/2012	2,893	<110	88	2800	5.2
	5/31/2012	15,290	<580	290	15000	<120
	6/14/2012	42,030	<1700	2900	39000	130
dupe	6/14/2012	45,550	<1800	3400	42000	150
	6/28/2012	31,000	<1500	<910	31000	<290
dupe	6/28/2012	33,000	<1500	<910	33000	<290
	7/12/2012	20,040	<580	2000	18000	40
	7/26/2012	16,300	<480	2300	14000	<96
	8/9/2012	9,500	<270	2400	7100	<54
	8/23/2012	1,930	<220	1500	430	<43
	9/6/2012	245	<42	190	55	<8.3
	9/20/2012	132	<42	93	39	<8.4
	10/5/2012	6	<140	<85	5.6	<27
K12	4/5/2012	242	<28	27	210	4.9
	4/17/2012	616	<75	41	570	5.1
lab rerun	4/17/2012	618	<30	42	570	5.9
	5/3/2012	29,520	<1400	240	29000	280
	5/15/2012	10,500	<480	500	10000	<95
dupe	5/15/2012	9,504	<700	220	9200	84
lab rerun	5/15/2012	9,902	<470	220	9600	82
	5/31/2012	3,942	<150	200	3700	42
	6/14/2012	1,604	<70	93	1500	11
	6/28/2012	4,374	<200	74	4300	<40
	7/12/2012	6,290	<230	290	6000	<46
	7/26/2012	2,295	<58	590	1700	5.3
	8/9/2012	6,100	<220	900	5200	<44
	8/23/2012	1,930	<310	1000	930	<61
	9/6/2012	330	<43	220	110	<8.6
	9/20/2012	105	<68	76	29	<13

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
	10/5/2012	0	<140	<86	<16	<27
K13	4/5/2012	68	<28	7.7	58	2
	4/17/2012	1,564	<50	260	1300	4
	5/3/2012	5,479	<280	79	5400	<56
	5/17/2012	992	<77	37	950	4.5
lab rerun	5/17/2012	952	<29	28	920	4
	5/31/2012	558	<30	42	510	5.8
	6/14/2012	1,267	<140	58	1200	9.4
	6/28/2012	367	<29	<18	360	7.1
	7/12/2012	1,261	<48	58	1200	3.2
	7/26/2012	1,267	<48	160	1100	7
	8/9/2012	1,144	<42	240	900	3.7
	8/23/2012	590	<140	350	240	<27
	9/6/2012	280	<55	120	160	<11
	9/20/2012	330	<75	120	210	<15
	10/5/2012	47	<43	14	33	<8.6
L11	1/26/2012	9,608	<280	3700	5900	8.3
	3/15/2012	77,010	<2200	3800	73000	210
	4/17/2012	1,061	<30	96	960	5.1
	5/3/2012	3,650	<180	150	3500	<35
	5/17/2012	3,800	<110	200	3600	<22
	5/31/2012	368	<30	46	320	2
	6/14/2012	355	<29	25	330	<5.7
	6/28/2012	190	<29	<18	190	<5.7
	7/12/2012	979	<130	69	910	<26
	7/26/2012	580	<36	110	470	<7.1
	8/9/2012	333	<28	120	210	2.8
	8/23/2012	208	<59	98	110	<12
	9/6/2012	186	<45	46	140	<9
	9/20/2012	84	<89	44	40	<18
	10/5/2012	430	<270	110	320	<54
L12	4/5/2012	466	8.7	19	430	8.3
	5/3/2012	1,006	<60	76	930	<12
	5/17/2012	1,588	<230	69	1500	19
lab rerun	5/17/2012	1,599	<110	89	1500	9.5
	5/31/2012	4,324	<120	84	4200	40
lab rerun	5/31/2012	3,804	<50	73	3700	31
	6/14/2012	1,365	<48	60	1300	5.4
	6/28/2012	9,500	<370	<230	9500	<73
	7/10/2012	680	<140	180	490	10
dupe	7/10/2012	804	<130	210	580	14
	7/26/2012	540	<980	180	360	<190
	8/9/2012	115	<29	63	52	<5.7
	8/23/2012	75	<43	56	19	<8.6
	9/6/2012	37	<47	19	18	<9.4
	9/20/2012	19	<44	13	6.4	<8.8
	10/5/2012	22	<41	8.2	14	<8.2

Frontier Fertilizer Stage 3

		COCs	DBCP	TCP	DCP	EDB
Location	Date	ug/m3	ug/m3	ug/m3	ug/m3	ug/m3
L13	1/26/2012	5,105	<160	2400	2700	4.7
	3/15/2012	10,942	29	870	10000	43
	5/3/2012	2,194	<120	94	2100	<23
	5/17/2012	8,490	<390	170	8300	20
	5/31/2012	3,352	<120	140	3200	12
	6/14/2012	280	<29	20	260	<5.7
	6/28/2012	2,400	<96	<60	2400	<19
	7/12/2012	270	<53	40	230	<10
	7/26/2012	694	<29	110	580	3.9
	8/9/2012	856	<82	150	700	6
lab rerun	8/9/2012	1,039	<29	190	840	8.9
	8/23/2012	655	<43	170	480	5.4
	9/6/2012	2,492	<91	380	2100	12
	9/20/2012	199	<41	36	160	3.2
	10/5/2012	269	<44	46	220	2.7
dupe	10/5/2012	266	<44	43	220	3.2


Stage 1 and 2 External Thermocouple Results
degrees C
40
30
20
10
11/18/2010
2/26/2011
6/6/2011
9/14/2011
12/23/2011
4/1/2012
7/10/2012
10/18/2012
1/26/2013
AA_1_30
AA_1_40
CC_1_30
CC_1_40
CC_6_30
CC_6_40
DD_1_30
DD_1_40
DD_1_50
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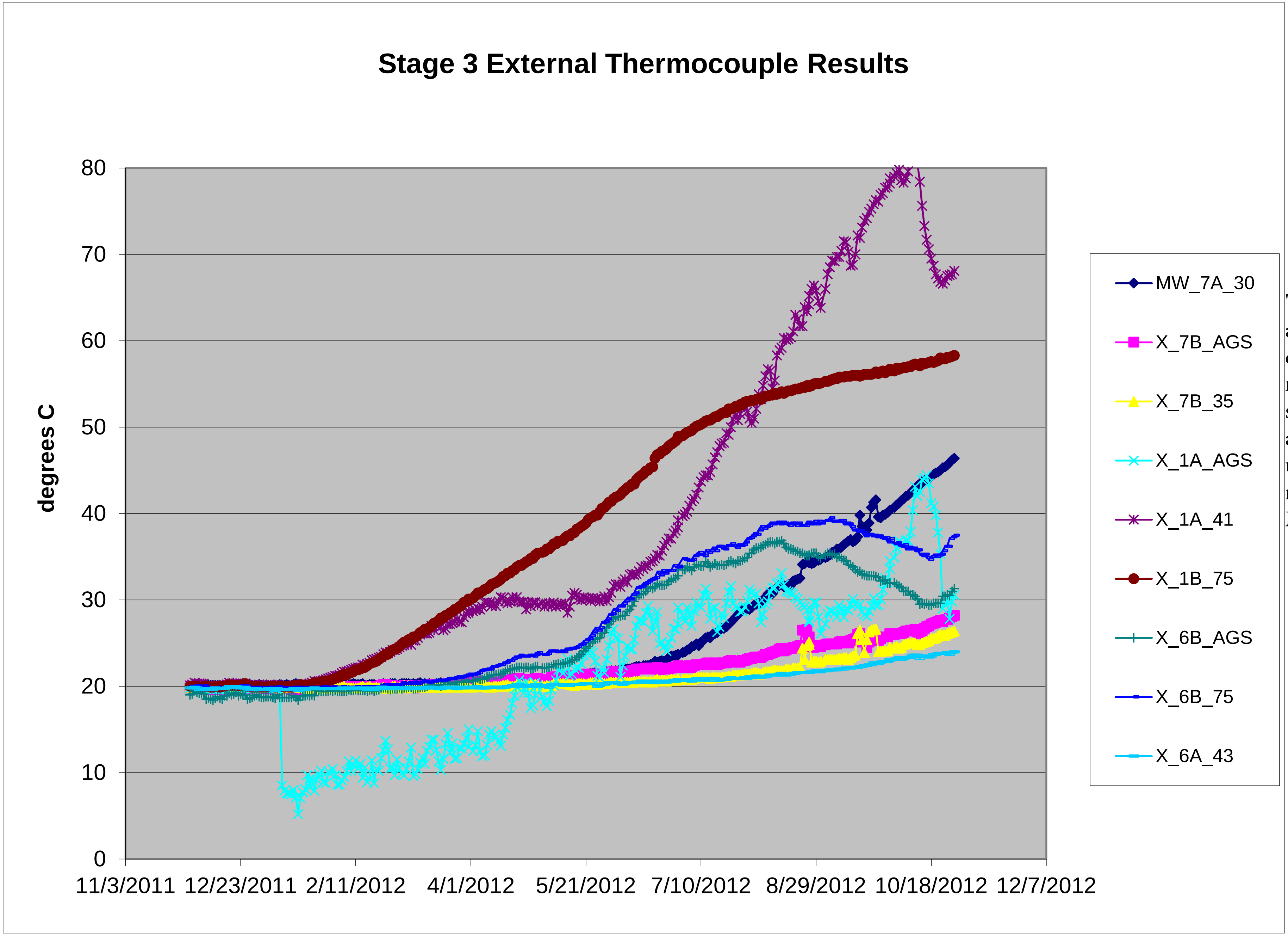
GG_1_80
EE_5_65
EE_5_75



"X-7B"was a typo in computer monitoring software and was used to monitor MW-7B

Frontier Fertilizer
ISTT Water Treatment System

Date	Time	Location	Stream	EPA R9 SDG	DBCP, ug/L EPA 524.2	TCP, ug/L. EPA 524.2	1,2-DCP,ug/L EPA 524.2	EDB, ug/L EPA 524.2	Chloroform, ug/L EPA 524.2	VCl, ug/L EPA 524.2	others, ug/L
3/29/2011	1:00 PM	Field Blank	near Q	11089A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	nd
3/29/2011	1:45 PM	LPGAC in	O	11089A	2.4	1.5	0.7	<0.5	1.6	<0.5	9.4
3/29/2011	1:45 PM	LPGAC in (dupe)	O	11089A	2.8	1.5	0.7	<0.5	1.6	<0.5	7.4
3/29/2011	2:30 PM	LPGAC out	Q	11089A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	nd
3/29/2011	2:30 PM	LPGAC out, low level	Q	11089A	<20 ng/L	<5 ng/l	na	<20ng/L	na	na	na
4/13/2011	3:07 PM	LPGAC in	O	11104B	<2	3.8	0.8	<0.5	0.3	<0.5	13.3
4/13/2011	3:10 PM	LPGAC out	Q	11104B	<2	<0.5	<0.5	<0.5	<0.5	<0.5	10.4
4/27/2011	2:41 PM	LPGAC out	Q	11118A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
4/27/2011	2:41 PM	LPGAC out, dupe	Q	11118A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
5/11/2011	3:25 PM	LPGAC in	O	11132B	<2	3.3	0.9	<0.5	0.7	<0.5	31.6
5/11/2011	3:10 PM	LPGAC out	Q	11132B	<2	<0.5	<0.5	<0.5	<0.5	<0.5	nd
5/25/2011	12:00 PM	LPGAC out	Q	11146B	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.4
6/29/2011	2:40 PM	LPGAC in	O	11181c	42	10	2	<0.5	0.9	<0.5	2935.2
6/29/2011	2:50 PM	Pri LPGAC out	P	11181c	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
6/29/2011	2:45 PM	LPGAC out	Q	11181c	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
7/27/2011	2:00 PM	LPGAC out	Q	11209B	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
8/31/2011	2:30 PM	LPGAC in	O	11244A	30	36	24	17	0.2	<0.5	5500
8/31/2011	2:35 PM	LPGAC out	Q	11244A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	4.1
9/28/2011	11:52 AM	LPGAC in	O	11272B	20	70	53	1.7	<0.5	<0.5	172.7
9/28/2011	11:47 AM	Pri LPGAC out	P	11272B	6.6	29	22	0.6	<0.5	<0.5	39.8
9/28/2011	11:47 AM	Pri LPGAC out,dupe	P	11272B	7.1	32	24	0.7	<0.5	<0.5	39.5
9/28/2011	11:55 AM	LPGAC out	Q	11272B	<2	0.6	0.7	<0.5	<0.5	<0.5	2.0
10/19/2011	2:55 PM	LPGAC in	O	11293B	*<2*	*39*	*23*	*0.7*	<0.5	<0.5	1565.2
10/19/2011	3:00 PM	Pri LPGAC out	P	11293B	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.4
10/19/2011	3:20 PM	LPGAC out	Q	11293B	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.3
11/29/2011	2:50 PM	LPGAC in	O	11334A	1.5	5	1.7	<0.5	<0.5	<0.5	495.1
11/29/2011	2:55 PM	LPGAC out	Q	11334A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.4
12/21/2011	3:00 PM	LPGAC in	O	11356A	<2	4.9	2.8	<0.5	<0.5	<0.5	469.6
12/21/2011	3:05 PM	LPGAC in, dupe	O	11356A	<2	4.7	2.6	<0.5	<0.5	<0.5	374.4
12/21/2011	3:06 PM	Pri LPGAC out	P	11356A	<2	1.1	0.8	<0.5	<0.5	<0.5	164

Frontier Fertilizer
ISTT Water Treatment System

Date	Time	Location	Stream	EPA R9 SDG	DBCP, ug/L EPA 524.2	TCP, ug/L. EPA 524.2	1,2-DCP,ug/L EPA 524.2	EDB, ug/L EPA 524.2	Chloroform, ug/L EPA 524.2	VCl, ug/L EPA 524.2	others, ug/L
12/21/2011	3:10 PM	LPGAC out	Q	11356A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	10
1/31/2012	3:10 PM	LPGAC in	O	12032b	<2	6.8	4.7	<0.5	<0.5	<0.5	772.1
1/31/2012	3:15 PM	Pri LPGAC out	P	12032b	<2	<0.5	<0.5	<0.5	<0.5	<0.5	17.5
1/31/2012	3:30 PM	LPGAC out	Q	12032b	<2, <0.021(504.1)	<0.5	<0.5	<0.5, <0.021(504.1)	<0.5	<0.5	0.5
2/28/2012	3:00 PM	LPGAC in	O	12060a	3.8	4.5	4.1	<0.5	<0.5	<0.5	289.5
2/28/2012	3:00 PM	LPGAC in, dupe	O	12060a	4.1	4.7	4.5	<0.5	<0.5	<0.5	318.9
2/28/2012	2:15 PM	LPGAC out	Q	12060a	<2, <0.021(504.1)	<0.5	<0.5	<0.5, <0.021(504.1)	<0.5	<0.5	0.3
2/28/2012	2:30 PM	field blank	Q	12060a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	2.4
3/27/2012	3:15 PM	LPGAC in	O	12088	1.7	3.2	6.6	<0.5	<0.5	<0.5	591.2
3/27/2012	3:30 PM	Pri LPGAC out	P	12088	<2	<0.5	0.6	<0.5	<0.5	<0.5	22.8
3/27/2012	3:00 PM	LPGAC out	Q	12088	<2, <0.021(504.1)	<0.5	<0.5	<0.5, <0.021(504.1)	<0.5	<0.5	1.2
4/25/2012	2:08 PM	LPGAC in	O	12117	<2	6.3	16	0.6	<0.5	<0.5	344.2
4/25/2012	2:10 PM	Pri LPGAC out	P	12117	<2	1.5	4.1	<0.5	<0.5	<0.5	77.9
4/25/2012	2:05 PM	LPGAC out	Q	12117	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.8
5/30/2012	2:00 PM	LPGAC in	O	12152a	<2	5.4	15	0.3	<0.5	<0.5	602.9
5/30/2012	2:55 PM	Pri LPGAC out	P	12152a	<2	2.6	7.9	<0.5	<0.5	<0.5	173.6
5/30/2012	2:55 PM	Pri LPGAC out, dupe	P	12152a	<2	2.4	7.2	<0.5	<0.5	<0.5	149.6
5/30/2012	2:02 PM	LPGAC out	Q	12152a	<2	0.7	2.4	<0.5	<0.5	<0.5	26.8
6/27/2012	3:00 PM	LPGAC in	O	12180a	<2	4.8	7.5	<0.5	<0.5	<0.5	601.5
6/27/2012	3:02 PM	Pri LPGAC out	P	12180a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
6/27/2012	3:03 PM	Pri LPGAC out, dupe	P	12180a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
6/27/2012	3:04 PM	LPGAC out	Q	12180a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
7/25/2012	1:55 PM	LPGAC in	O	*12208a	1.9	7.9	5.3	<0.5	<0.5	<0.5	298.6
7/25/2012	2:00 PM	Pri LPGAC out	P	*12208a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.0
7/25/2012	2:02 PM	Pri LPGAC out, dupe	P	*12208a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.1
7/25/2012	1:58 PM	LPGAC out	Q	*12208a	<2	<0.5	<0.5	<0.5	<0.5	<0.5	nd
		*lab refrigerator failure, samples >15C and flagged as estimates.									
8/29/2012	3:00 PM	LPGAC in	O	12243A	<2	2	0.3	<0.5	<0.5	<0.5	143.7
8/29/2012	3:05 PM	Pri LPGAC out	P	12243A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.6

Frontier Fertilizer
ISTT Water Treatment System

Date	Time	Location	Stream	EPA R9 SDG	DBCP, ug/L EPA 524.2	TCP, ug/L. EPA 524.2	1,2-DCP,ug/L EPA 524.2	EDB, ug/L EPA 524.2	Chloroform, ug/L EPA 524.2	VCl, ug/L EPA 524.2	others, ug/L
8/29/2012	3:05 PM	Pri LPGAC out, dupe	P	12243A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.8
8/29/2012	2:55 PM	LPGAC out	Q	12243A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.7
9/26/2012	3:20 PM	LPGAC in	O	12271A	<2	0.9	<0.5	<0.5	<0.5	<0.5	135.1
9/26/2012	3:22 PM	Pri LPGAC out	P	12271A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1
9/26/2012	3:22 PM	Pri LPGAC out, dupe	P	12271A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.1
9/26/2012	3:25 PM	LPGAC out	Q	12271A	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.6

Drill rig and support rig used for installation of Preliminary Monitoring Points (PMPs). 2008.

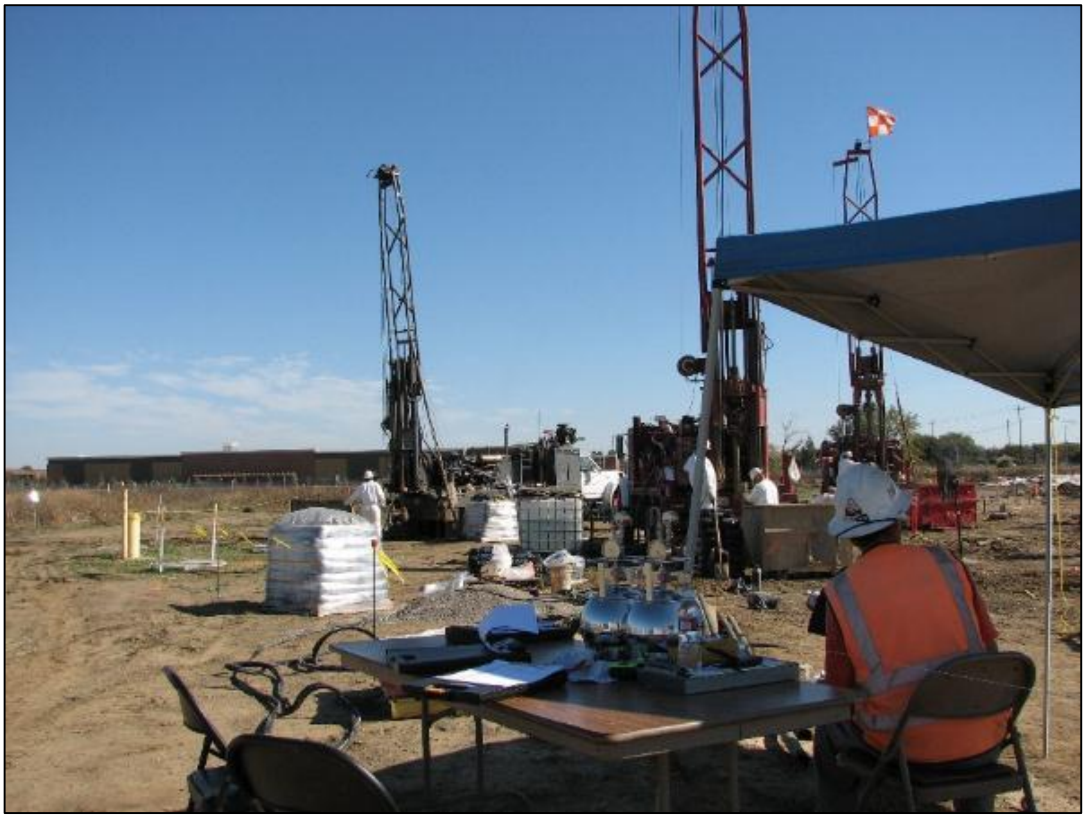
Fluids handling during installation of Preliminary Monitoring Points (PMPs). 2008.

Full-face respirators during installation of Preliminary Monitoring Points (PMPs). 2008.

Site graded. 2009.

Installation of electrodes; temperature monitoring wells (TMWs). 2009.

Installation of electrodes; temperature monitoring wells (TMWs). 2009.



Installation of electrodes; temperature monitoring wells (TMWs). 2009.

SUMMA canisters used for aim monitoring during Installation of electrodes; temperature monitoring wells (TMWs). 2009.

Completed TMW-19. 2009.

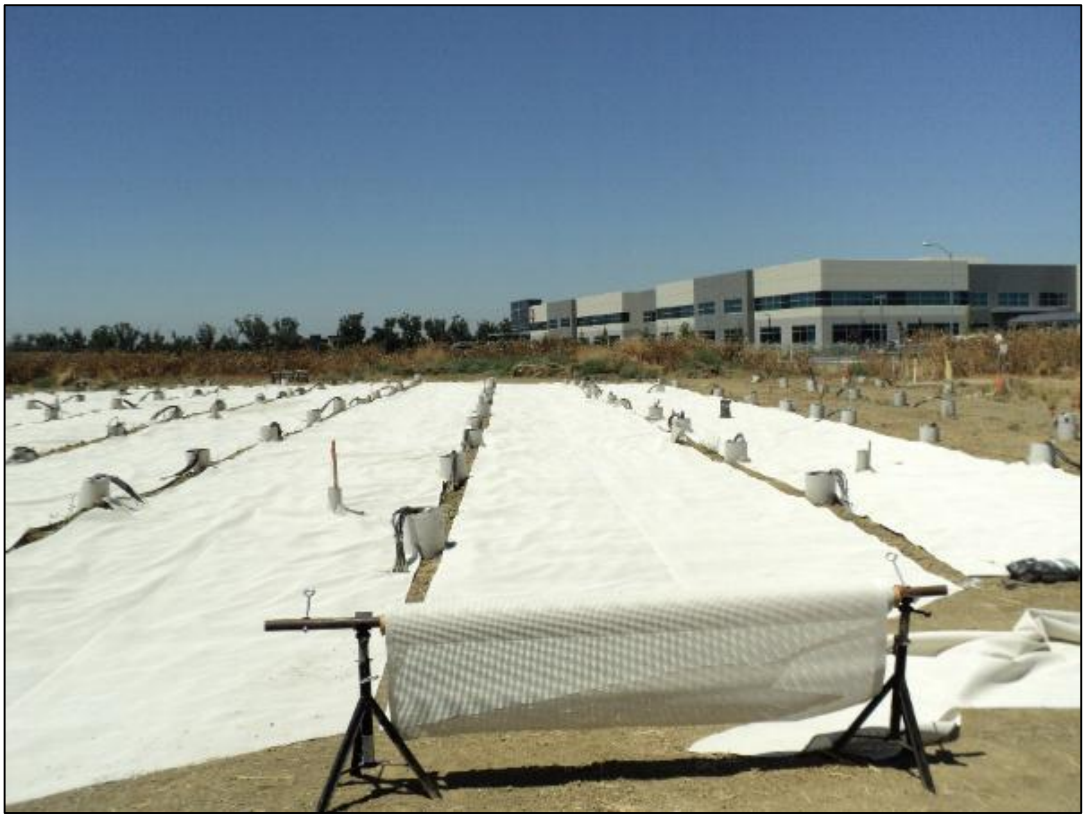
Completed electrode E-10.

Field after installation. Wellheads protected in tubes awaiting cap installation. Soil cuttings were spread over the shallow treatment areas; these are shown covered in plastic awaiting cap install. 2009.

Delivered cap materials. 2010.

Field ready for cap install. 2010.

Wires from puppy electrodes to associated electrode. 2010.



Placement of screen.

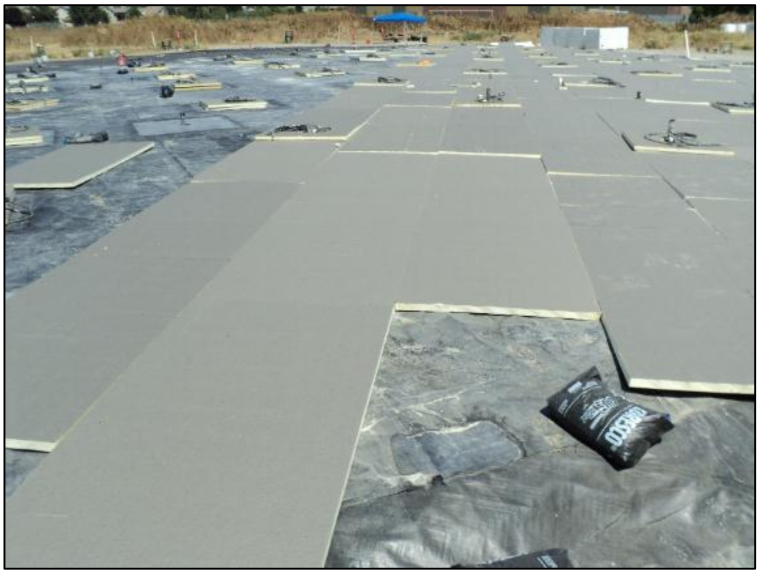
Placement of gravel layer on cap screen.

Measuring gravel layer under fugitive emission cap.

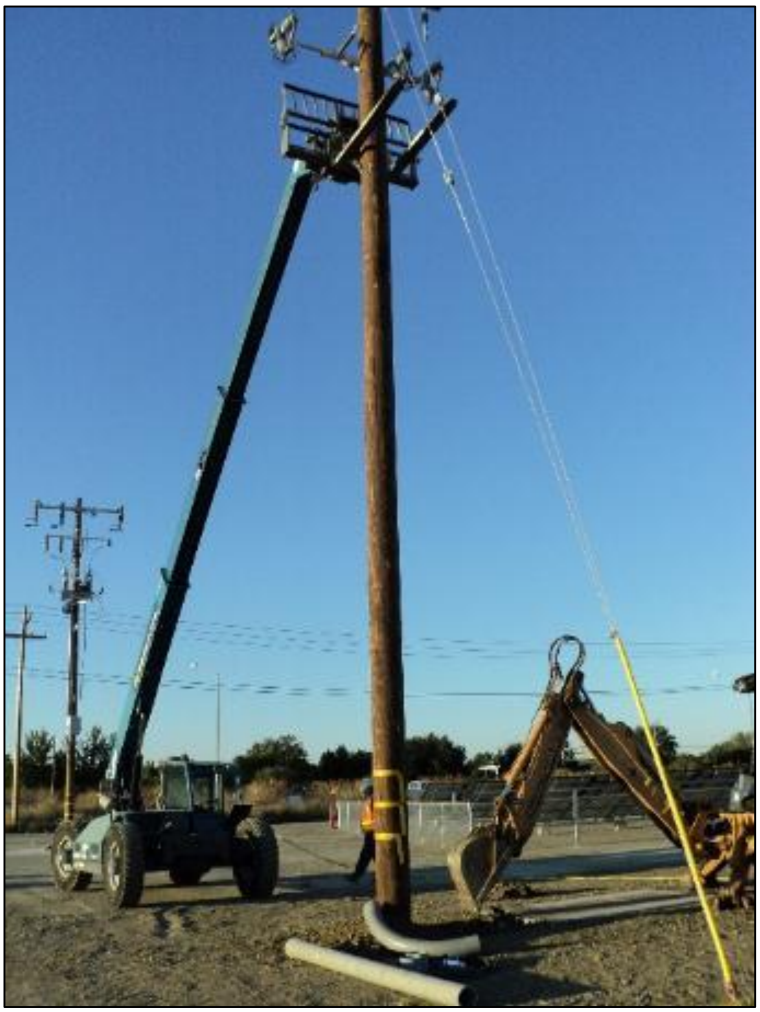
Unfolding layer of high-density polyethylene (HDPE) onto cap.

Layer of EPDM (right side) over layer of high-density polyethylene (HDPE).

Sealing cap penetrations.



Placement of insulation board onto cap.



PG&E installing power drop to site transformer.

PG&E working on transformer.

Temperature on the cap at 16:50 was near 130 degrees Fahrenheit.

Switchgear testing in progress.

City-approved power for connection.

Wellheads prepared for grout.

Cap buried at perimeter.

Grouted wellhead.

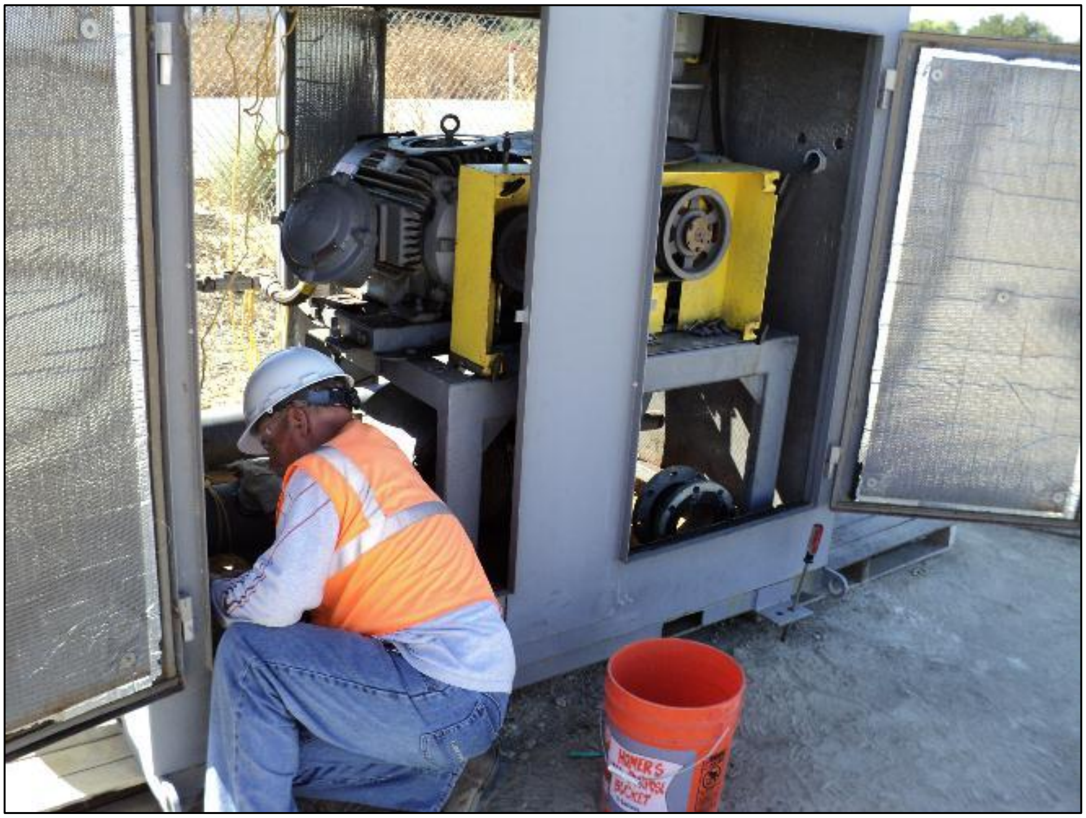
Compacting base for treatment pad.

Asphalt treatment pad.

Berm on asphalt pad has been constructed; forklift ramp being installed.

Rock pad placed next to treatment pad for use with power supplies. Office trailer in background.

Delivered cooling tower skid.



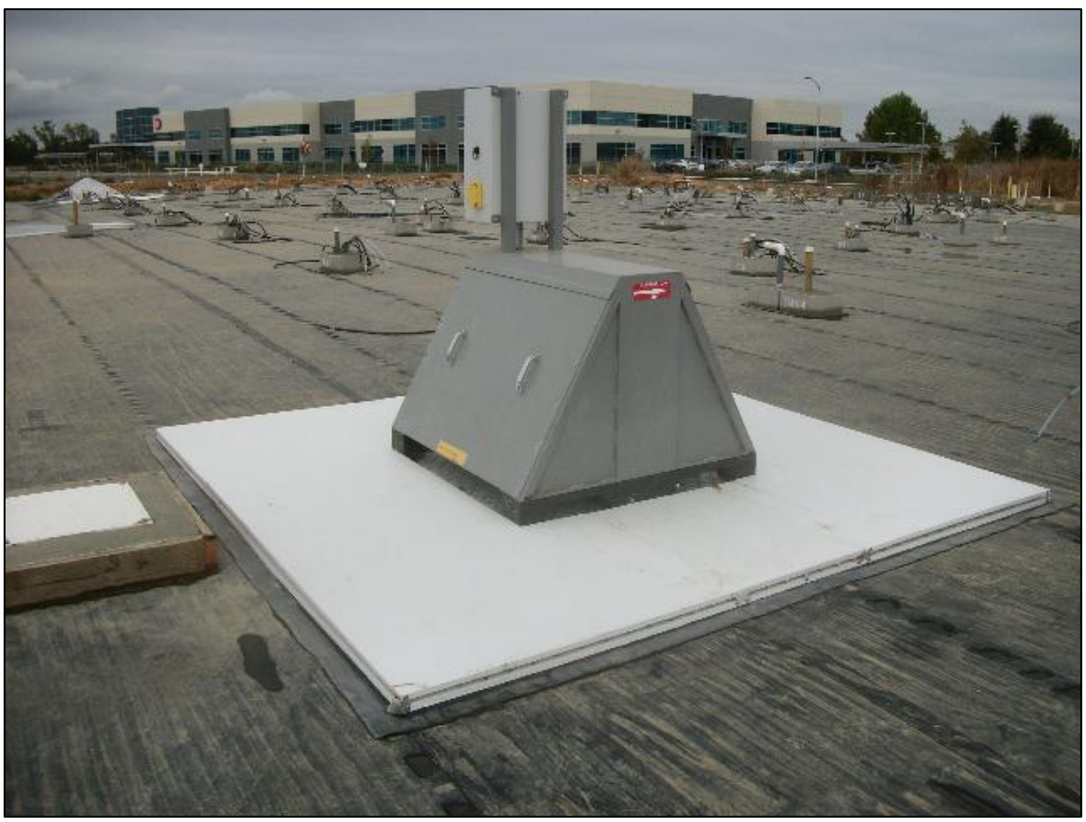
Examining one of the delivered vapor extraction units (VEUs).

Placement of one of many power transformers at site.

Power supply delivered and placed at site (awaiting electrical connections).

Three transformers and a power supply; treatment pad in foreground.

Grounding mats on treatment pad; will be used for current transducers or drip skids.



Placed current transformer.

Measurement and cutting of wires.

Placement of vacuum extraction units (VEUs). The small unit is the backup blower.

Delivered drip skids.

Placement of current transducer.

Placement of air/water separator.

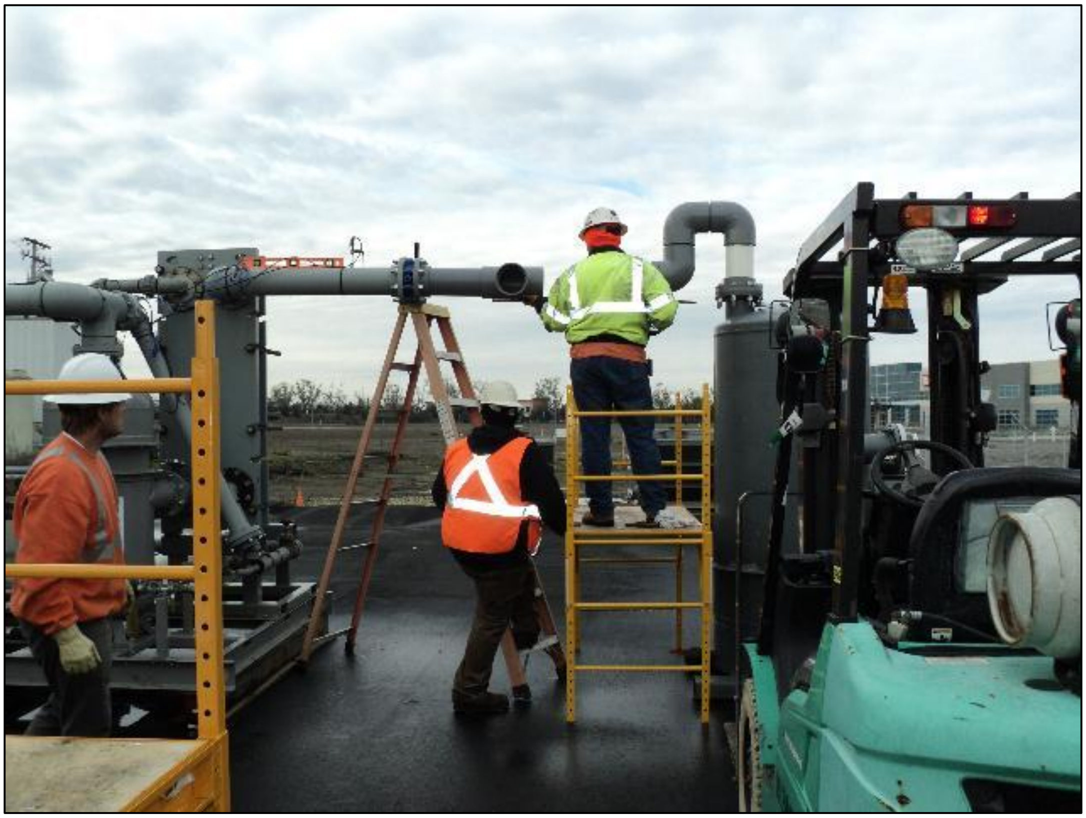
Placement of cooling tower.

Fence installation.

Connecting wires, in progress.

Wires placed on cap.

Installing plumbing.



Plumbing equipment.

Placement of the vapor extraction manifold.

Installing vapor extraction manifold.

Wiring thermocouples (blue wires).

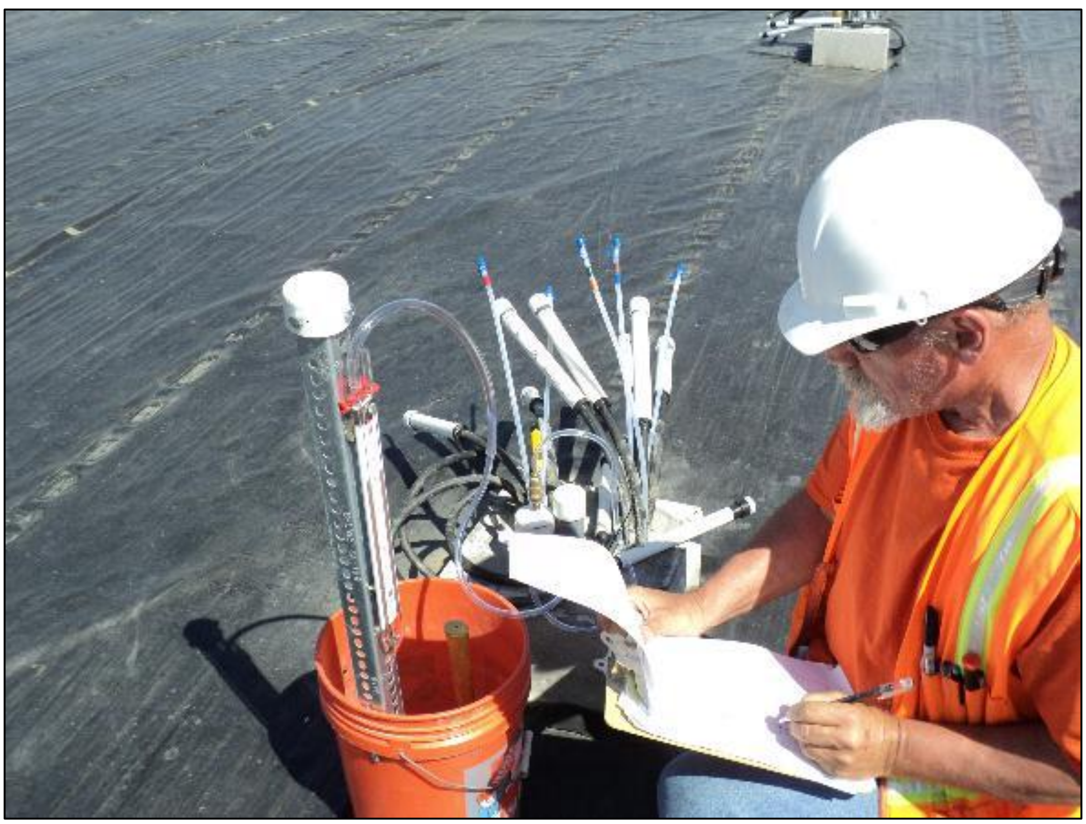
Wellhead installed, wires connected, and vacuum extraction lines (VEUs) connected to manifolds.

5,000-gallon tank installation.

Plumbing from coalescer to vapor phase carbon units.

Granular activated carbon (GAC) vessels.

Discharge stack (for startup and Stage 1 with only single blower operation).



Collecting manometer readings.

Discharge stack for multiple blower operation.

Connecting wells to manifolds.

Emergency stop buttons, one per power supply.

Wellfield, Stage 3.

Removal of ISTT components. The lack of wires, manifolds, and skids on the cap is allowing the insulation board to lift significantly.

Wires and manifolds staged off cap.

Wire rolling equipment.

Wire rolling.

Cleaning cap sediments released from manifold.

Loading equipment storage container.

Equipment staged for loading.

Additional equipment removal.

Sediments removed, separated, and dewatered during treatment (vapor-containing cap removed).

Sediments loaded for disposal.

Removal of wellhead.

Trailer removal.

Equipment loaded for removal.

Appendix B
Ambient Air Monitoring Summary Report
(CD Only)

Appendix C
Post-Heating Sampling Field Data Sheets
(CD Only)

Appendix D
Post-Heating Laboratory Data Reports
(CD Only)

Appendix E
Data Quality Assessment

APPENDIX E

Data Quality Assessment

The chemical data quality for the Post-ISTT sampling was managed through the following tools and processes:

- Data quality objectives process as documented in the quality assurance plan in *Addendum No 1 to the Sampling and Analysis Plan for the In-Situ Thermal Treatment at Frontier Fertilizer NPL Site* (CH2M HILL, 2013)
- Project quality assurance plans to define procedures and functional policies for data of known and appropriate quality along with field sampling plans (CH2M HILL, 2013)
- Laboratory quality assurance through audits
- Data validation and quality assessment

The following is a description of the analytical methodology, data validation assessment methodology, and findings.

E.1 Analytical Program/Methodology

The analytical parameters and the associated methods, which are the standard U.S. Environmental Protection Agency (EPA) analytical method references, are contained in the project-specific SAP (CH2M HILL, 2013).

Analyses were carried out through the EPA Contract Laboratory Program (CLP), EPA Regional Laboratory, and DHL Analytical, in accordance with CLP methodology and standard EPA methods for the Regional Laboratory, and were modified for lower detection where needed. The quality assurance/quality control (QA/QC) was done in accordance with CLP and Regional Laboratory standard operating procedures. Table E-1 shows the analytes for the data and the associated measurement performance criteria.

The QAPP identifies the following method-specific QC requirements directly or through reference:

- Level of effort (frequency of QC checks) for each QC procedure
- Quantitative acceptance limits for QC data
- Corrective action requirements for the laboratories for QC data that are outside the acceptance limits
- Detection limit requirements

These requirements (as well as EPA Regional Laboratory and CLP standard operating procedures) have been followed as the project analytical requirements by the laboratory. The analytical laboratory established method detection limits (MDLs) in accordance with Title 40, Part 136, Appendix B, of the Code of Federal Regulations (CFR) before start of the work to ensure that laboratory-specific limits complied with the QAPP specifications.

TABLE E-1
VOC Measurement Performance Criteria
Post-ISTT Data Quality Assessment, Frontier Fertilizer NPL Site, Davis, California

Analyte	Water Reporting Limit (µg/L)	Soil Reporting Limit (µg/kg)	Accuracy as Percent Recovery (water)	Precision as Relative Percent Difference (water)	Overall Completeness (%)
DBCP	0.05/(0.02 by 524.2SIM or 504.1)	5	80 to 120	25	90
1,2-Dibromoethane (EDB)	0.5/(0.02 by 524.2SIM or 504.1)	5	80 to 120	25	90
1,2-DCP	0.5	5	80 to 120	25	90
1,2,3-TCP	0.5/(0.005 by 524.2SIM)	5	80 to 120	25	90
Benzene	0.5	5	80 to 120	25	90
Chlorobenzene	0.5	5	80 to 120	25	90
1,1-Dichlorethane	0.5	5	80 to 120	25	90
1,2-Dichloroethane	0.5	5	80 to 120	25	90
1,3-Dichloropropane	0.5	5	80 to 120	25	90
Methyl tert-butyl ether	0.5	5	80 to 120	25	90
CCl_4	0.5	5	80 to 120	25	90
Toluene	0.5	5	80 to 120	25	90
Xylenes	0.5	5	80 to 120	25	90
Vinyl bromide	0.5	5	80 to 120	25	90
Vinyl chloride	0.5	5	80 to 120	25	90
Tetrachloroethene	0.5	5	80 to 120	25	90
Trichloroethene	--	--	80 to 120	25	90
Chloroform	--	--	80 to 120	25	90
1,4-Dichlorobenzene	--	--	80 to 120	25	90
1,1-Dichloroethene	--	--	80 to 120	25	90
Methyl ethyl ketone	--	--	80 to 120	25	90

Notes:

CCl_4 = carbon tetrachloride
DCP = dichloropropane
EDB = ethylene dibromide
TCP = trichloropropane

E.2 Data Validation and Findings

E.2.1 Data Validation Methodology

All data (100 percent) have been evaluated independently of the laboratory by project chemists per EPA National Functional Guidelines.

CLP sample data have been reviewed outside the laboratories by EPA for 100 percent of the data using semiautomated data review. Additionally, a minimum of 10 percent of the data have been reviewed by the EPA Quality Assurance Office or its designee using EPA National Functional Guidance for the QC specifications identified in the project QAPP for each specific parameter; these data are flagged in accordance with the project QAPP, and the review was performed at the Tier 3 level per regional designation. All the EPA Regional Laboratory data have been reviewed by EPA lab chemists for all the QC parameters as well as for the identification and quantitation of the analytes.

E.2.2 Reporting

Sample and parameter-specific data validation reports for the data are provided in (Appendix A and D of the *In Situ Thermal Treatment Completion Report*). Data validation findings and qualifications/flags for these reports are summarized in Table E-2 at the end of this appendix.

EPA Regional Laboratory data QA review reports are presented in the laboratory data packages in the narrative section of the *In Situ Thermal Treatment Completion Report* Appendix A and D (on disc). Each report has subsections that correspond to the internal QC check requirements for that specific method as identified in the project QAPP and EPA data validation functional guidelines. If laboratory data were found to deviate from the specifications, the subsection provides quantitative details for the QC data deviation and the associated affected samples and provides flags according to defined conventions.

E.2.3 Flagging Conventions, Data Validation Findings

QAPP criteria and EPA data validation functional guidance were used to determine flagging conventions. Data validation flags have been entered into the database and subsequently into project reports. Data validation findings and qualifications/flags are summarized in Table E-2 for Tier 3 validation and Tier 1 Computer Aided Data Review and Evaluation (CADRE) validation.

For all sample delivery groups (SDGs) more than 90 percent of data were found to be within criteria; this is shown in Tables E-2 and in the electronic database. Low-level analysis method detects are reported unless samples are found to have concentrations exceeding instrument calibration linearity. Higher-level analysis is reported only when analyte concentrations require it. Validation flags applied to non-reported high level analysis and non-reported re-analysis are not discussed.

Data presented in this report include validation flags.

E.2.4 Data Storage

Backup information for the data evaluation and validation findings includes the following:

- Laboratory hard copy packages, assembled in SDG units, which include all QC data. These packages are stored at the EPA Region 9 laboratory and EPA CLP.
- Non-CLP laboratory data reports stored on CD and electronically in project files.
- Laboratory electronic databases, which include all sample concentration data with laboratory data flags and a subset of laboratory QC data.
- Chain-of-custody forms and tracking records in project files as well as in the laboratory.
- Laboratory bench records and sample custody logs maintained by the laboratory.

- Project electronic databases, to include validation flags stored with project files; electronic database structure/content are in accordance with project/program specifications.

E.2.5 Data Quality Assessment and Quality Control Data

Data quality objectives have been prescribed in the QAPP in terms of precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters. The following is a description of the assessment for each parameter. Associated data for the PARCC parameters are in laboratory hard copy packages, and a subset of these parameters is found in laboratory as well as project electronic databases. The following tables (presented at the end of this appendix) provide data associated with the PARCC evaluations:

- Precision (field duplicate Tables E-3a and E-3b)
- Accuracy (field and equipment blank Tables E-4a and E-4b; surrogate results Tables E-5a and E-5b; lab control standards Tables E-6a and E-6b)
- Representativeness (field blank Table E-4a)
- Comparability (field duplicate Table E-3)
- Completeness (data validation summary Table E-2)

Accuracy measurement data include laboratory control sample and matrix spike recovery data for both organic and inorganic analytical parameters, as well as surrogate recovery data for organic parameters. Surrogate recoveries are summarized in Table E. Laboratory control standard recoveries are provided in Tables E-6a and E-6b. Evaluation of these data is shown in the appended data validation reports (*In Situ Thermal Treatment Completion Report* Appendix A and D, on disc). Recoveries are found to be within limits at large (over 90 percent). Matrix spike recoveries are not a required parameter of the site QAPP. However, based on laboratory control samples, it can be established that the instrumental analytical goal for accuracy has been achieved. As for the potential sample matrix effects on the accuracy, the reported surrogate recoveries can be used as indicators. Surrogate results do not indicate potential bias. Recoveries for laboratory control samples and surrogates meet project criteria for more than 90 percent of the results. Therefore, it is deduced that the accuracy goals have been met.

Precision measurement data include laboratory and field duplicate data expressed as relative percent deviation. Field duplicate measurements are shown in Tables E-3a and E3-b. The evaluation of lab duplicates can be seen in the appended data validation reports (*In Situ Thermal Treatment Completion Report* Appendix A and D, on disc). Laboratory duplicate data were found to be within acceptance criteria at large, as shown in the validation reports and Table E-2; therefore, no significant lab precision bias is noted. Field duplicate relative percent recoveries (Tables E-3a and E-3b) do not indicate significant field bias. The larger deviations noted for some of the analytes are intrinsic to the limitations of the measurements, such as the proximity of the reported concentrations to the detection limits. The observed deviations also represent the heterogeneity of the contaminant distribution in the measured media; the heterogeneity depends on the nature of the molecules and the media. Data users have taken these findings into consideration in their decision processes. Thus, overall project precision targets are also met, and no significant biases are noted.

Representativeness is a measure of how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the sampled media. Representativeness is assessed in both qualitative and quantitative terms. The project report discusses the qualitative aspects of representativeness in terms of design of the field sampling plan, sampling techniques, sample handling protocols, and associated documentation. Quantitative measures of representativeness include field and laboratory blank measurements to identify whether contamination was introduced through field or laboratory operations. Field duplicate measurements (Tables E-3a and E-3b) are used to establish variability. Factors that affect this variability are discussed above. Field blank results and associated evaluations are shown in Tables E-4a and E-4b. For sample results where the concentration is less than five times the associated field blank detection, the sample results are qualified as non-detects. These validation flags are noted in Table E-2. These field blank qualifications have not affected project decisions or the needed representativeness. Similarly, samples have been qualified for laboratory blanks through the validation reports where no significant bias has been noted.

Comparability expresses the confidence with which one data set can be compared to another. Comparability of data has been established through use of the following:

- Standard analytical methods and QC procedures established in the project QAPP
- Consistent reporting units for a specified procedure
- MDLs for all analytical parameters that were established in accordance with 40 CFR Part 136, Appendix B, before the start of the analyses to meet the project requirements

Completeness in this report is assessed as a measure of the amount of valid data obtained from the analytical measurements. Field activity completeness is assessed within the context of the overall sampling design. Data validation summaries are presented in Tables E-2. Data completeness was found to be above 90 percent for all the data. Analytical data as qualified meet the data quality objectives and can be used in project decision-making.

E.3 References

CH2M HILL. 2013. *Addendum No. 1 to the Sampling and Analysis Plan for the In-Situ Thermal Treatment at Frontier Fertilizer NPL Site (March 2011)*.

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y8ZZ6	AA1-A654	8/19/2013	GW	2-Butanone (MEK)	TVOL	1.1	µg/L	J	Surr<LCL		J	J	J	J
Y90D3	SB18-A655-50	9/5/2013	Soil	Acetone	SOM01.2_CVOI	15	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	AA1-A654	8/19/2013	GW	Chloroform	TVOL	0.32	µg/L	J	Surr<LCL		J	J	J	J
13234A	CC2-A654	8/20/2013	GW	1,2,3-Trichloropropane (TCP)	E524.2SIM	0.003	µg/L	J	conc<RL		J		J	J,C1
Y9017	SB09-A655-50	8/29/2013	Soil	Acetone	SOM01.2_CVOI	11	µg/kg	U	Blank>CL	U	U	U	J	JB
Y8ZZ6	CC2-A654	8/20/2013	GW	Toluene	TVOL	0.064	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC3-A654	8/21/2013	GW	1,2,3-Trichloropropane (TCP)	TVOL	1.6	µg/L	J	CCV>CL		J	J		
Y8ZZ6	CC3-A654	8/21/2013	GW	2-Butanone (MEK)	TVOL	0.77	µg/L	J	Surr<LCL		J	J	J	J
Y90A3	SB14-A655-50	8/30/2013	Soil	Acetone	SOM01.2_CVOI	10	µg/kg	U	Blank>CL		U	U	J	JB
Y90B9	SB16-A655-60	9/4/2013	Soil	Acetone	SOM01.2_CVOI	10	µg/kg	U	Blank>CL		U	U	J	J
Y8ZZ6	CC3-A654	8/21/2013	GW	Chlorobenzene	TVOL	0.074	µg/L	J	Surr<LCL		J	J	J	J
Y90A3	SB09-A655-70	8/29/2013	Soil	Acetone	SOM01.2_CVOI	8.9	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC3-A654	8/21/2013	GW	METHYLCYCLOHEXANE	TVOL	0.15	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC3-A654	8/21/2013	GW	Toluene	TVOL	0.065	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC3-A654	8/21/2013	GW	Vinyl Bromide	TVOL	0.084	µg/L	J	Surr<LCL		J	J	J	J
Y90A3	SB12-A655-02	8/30/2013	Soil	Acetone	SOM01.2_CVOI	8.9	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC4-A654	8/21/2013	GW	tert-Butyl Methyl Ether (MTBE)	TVOL	0.35	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC4-A654	8/21/2013	GW	Toluene	TVOL	0.45	µg/L	J	Surr<LCL		J	J	J	J
13234A	CC5-A654	8/21/2013	GW	1,2,3-Trichloropropane (TCP)	E524.2SIM	0.003	µg/L	J	conc<RL		J		J	J,C1
13234A	CC5-A654	8/21/2013	GW	1,2-Dibromo-3-Chloropropane (	E524.2SIM	0.007	µg/L	J	conc<RL		J		J	J,C1
Y8ZZ6	CC5-A654	8/21/2013	GW	1,2-Dichloropropane (DCP)	TVOL	0.21	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC5-A654	8/21/2013	GW	2-HEXANONE (METHYL N-BUTYI	TVOL	3.1	µg/L	J	Surr<LCL		J	J	J	J
Y90D3	SB06-A655-02	9/9/2013	Soil	Acetone	SOM01.2_CVOI	8	µg/kg	U	Blank>CL		U	U	J	JB
Y90A3	SB09-A655-80	8/29/2013	Soil	Acetone	SOM01.2_CVOI	7.2	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC5-A654	8/21/2013	GW	cis-1,3-Dichloropropene	TVOL	0.23	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC5-A654	8/21/2013	GW	Toluene	TVOL	0.12	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC5-A654	8/21/2013	GW	trans-1,3-Dichloropropene	TVOL	0.16	µg/L	J	Surr<LCL		J	J	J	J
Y90B1	SB15-A655-60	9/10/2013	Soil	Acetone	SOM01.2_CVOI	6.9	µg/kg	U	Blank>CL		U	U	J	JB
Y9017	SB09-A655-40	8/29/2013	Soil	Acetone	SOM01.2_CVOI	6.3	µg/kg	U	Blank>CL	U	U	U	J	JB
Y90B9	SB08-A655-40	9/5/2013	Soil	Acetone	SOM01.2_CVOI	5.9	µg/kg	U	Blank>CL		U	U	J	JB
Y90A3	SB12-B655-02	8/30/2013	Soil	Acetone	SOM01.2_CVOI	5.4	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD1-B654	8/21/2013	GW	Chloroform	TVOL	0.18	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD1-A654	8/21/2013	GW	Chloroform	TVOL	0.17	µg/L	J	Surr<LCL		J	J	J	J
Y9017	SB07-A655-40	8/27/2013	Soil	Acetone	SOM01.2_CVOI	5.1	µg/kg	U	Blank>CL	U	U	U	J	JB
Y90A3	SB09-A655-60	8/29/2013	Soil	Acetone	SOM01.2_CVOI	4.9	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD2-A654	8/21/2013	GW	Chlorobenzene	TVOL	0.066	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD2-A654	8/21/2013	GW	Chloroform	TVOL	0.37	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD3-A654	8/21/2013	GW	1,1-Dichloropropene	TVOL	0.088	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD3-A654	8/21/2013	GW	1,2-Dichloropropane (DCP)	TVOL	0.35	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-A654	8/23/2013	GW	Acetone	TVOL	4.7	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	FF3-C654	8/21/2013	QCwater	Acetone	TVOL	4.6	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD3-A654	8/21/2013	GW	Chlorobenzene	TVOL	0.29	µg/L	J	Surr<LCL		J	J	J	J
Y90B9	SB08-A655-20	9/5/2013	Soil	Acetone	SOM01.2_CVOI	4.6	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD3-A654	8/21/2013	GW	Toluene	TVOL	0.095	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD3-A654	8/21/2013	GW	Vinyl Bromide	TVOL	0.051	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-B654	8/23/2013	GW	Acetone	TVOL	4.5	µg/L	U	Blank>CL		U	U	J	JB
Y90B1	SB10-B655-60	9/9/2013	Soil	Acetone	SOM01.2_CVOI	4.5	µg/kg	U	Blank>CL		U	U	J	J
Y8ZZ6	DD4-A654	8/21/2013	GW	Chlorobenzene	TVOL	0.077	µg/L	J	Surr<LCL		J	J	J	J
Y90B9	SB08-A655-50	9/5/2013	Soil	Acetone	SOM01.2_CVOI	4.2	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD4-A654	8/21/2013	GW	M,P-XYLENE	TVOL	0.14	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD4-A654	8/21/2013	GW	Toluene	TVOL	0.41	µg/L	J	Surr<LCL		J	J	J	J
Y9017	SB07-A655-30	8/27/2013	Soil	Acetone	SOM01.2_CVOI	4	µg/kg	U	Blank>CL	U	U	U	J	JB
Y90A3	SB12-A655-40	9/3/2013	Soil	Acetone	SOM01.2_CVOI	3.9	µg/kg	U	Blank>CL		U	U	J	JB
Y90A3	SB14-A655-60	8/30/2013	Soil	Acetone	SOM01.2_CVOI	3.7	µg/kg	U	Blank>CL		U	U	J	JB
Y90A3	SB12-A655-30	9/3/2013	Soil	Acetone	SOM01.2_CVOI	3.7	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC1-A654	8/22/2013	GW	Chloroform	TVOL	0.22	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC1-A654	8/22/2013	GW	Toluene	TVOL	0.14	µg/L	J	Surr<LCL		J	J	J	J
Y90D3	SB08-A655-70	9/6/2013	Soil	Acetone	SOM01.2_CVOI	3.6	µg/kg	U	Blank>CL		U	U	J	JB
Y90B1	SB11-A655-30	9/10/2013	Soil	Acetone	SOM01.2_CVOI	3.6	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC1-A654	8/22/2013	GW	Acetone	TVOL	3.5	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC3-A654	8/21/2013	GW	Acetone	TVOL	3.4	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC6-D654	8/22/2013	QCwater	Chloroform	TVOL	0.13	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF2-A654	8/22/2013	GW	Benzene	TVOL	93	µg/L	J	>IcalRange	J	JE	J	E	E
Y9017	FF2-A654	8/22/2013	GW	CARBON DISULFIDE	TVOL	0.66	µg/L	J	Surr<LCL		J	J		
Y9017	FF2-A654	8/22/2013	GW	M,P-XYLENE	TVOL	0.2	µg/L	J	Surr>UCL	J	J	J	J	J
Y9017	FF2-A654	8/22/2013	GW	Toluene	TVOL	1.4	µg/L	J	Surr>UCL	J	J	J		
Y9017	FF3-A654	8/22/2013	GW	2-HEXANONE (METHYL N-BUTYI	TVOL	3.1	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF3-A654	8/22/2013	GW	4-METHYL-2-PENTANONE (PENT	TVOL	3.4	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF3-A654	8/22/2013	GW	Acetone	TVOL	560	µg/L	J	>IcalRange	J	E		E	EB
Y9017	FF3-A654	8/22/2013	GW	Benzene	TVOL	24	µg/L	J	>IcalRange	J	JE	J	E	E
Y90D3	SB10-A655-50	9/6/2013	Soil	Acetone	SOM01.2_CVOI	3.1	µg/kg	U	Blank>CL		U	U	J	JB
Y9017	FF3-A654	8/22/2013	GW	M,P-XYLENE	TVOL	0.13	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF3-A654	8/22/2013	GW	Toluene	TVOL	0.36	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-B654	8/23/2013	GW	1,2-Dichloropropane (DCP)	TVOL	0.47	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-A654	8/23/2013	GW	1,2-Dichloropropane (DCP)	TVOL	0.45	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-B654	8/23/2013	GW	2-Butanone (MEK)	TVOL	1.5	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD3-A654	8/21/2013	GW	Acetone	TVOL	2.8	µg/L	U	Blank>CL		U	U	J	JB
Y90B9	SB16-A655-50	9/4/2013	Soil	Acetone	SOM01.2_CVOI	2.7	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	BB1-B654	8/23/2013	GW	Benzene	TVOL	0.2	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-A654	8/23/2013	GW	Benzene	TVOL	0.22	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-B654	8/23/2013	GW	CARBON DISULFIDE	TVOL	1.4	µg/L	J	Surr<LCL		J	J		
Y8ZZ6	BB1-A654	8/23/2013	GW	CARBON DISULFIDE	TVOL	1.3	µg/L	J	Surr<LCL		J	J		
Y8ZZ6	BB1-B654	8/23/2013	GW	Toluene	TVOL	0.12	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	BB1-A654	8/23/2013	GW	Toluene	TVOL	0.12	µg/L	J	Surr<LCL		J	J	J	J

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B9	SB16-A655-60	9/4/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	2.4	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	BB2-A654	8/23/2013	GW	Benzene	TVOL	0.083	µg/L	J	Surr<LCL		J	J	J	J
Y90B1	SB10-A655-60	9/9/2013	Soil	Acetone	SOM01.2_CVOI	2.4	µg/kg	U	Blank>CL		U	U	J	J
Y8ZZ6	BB2-A654	8/23/2013	GW	Toluene	TVOL	0.067	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD4-A654	8/21/2013	GW	Acetone	TVOL	2.3	µg/L	U	Blank>CL		U	U	J	JB
Y90A3	SB12-A655-50	9/3/2013	Soil	Acetone	SOM01.2_CVOI	2.3	µg/kg	U	Blank>CL		U	U	J	JB
Y8ZZ6	BB3-A654	8/23/2013	GW	Chloroform	TVOL	0.14	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE2-A654	8/23/2013	GW	2,3-Dichloropropene	TVOL	0.58	µg/L	J	Surr<LCL		J	J		
Y8ZZ6	EE2-A654	8/23/2013	GW	2-HEXANONE (METHYL N-BUTYI	TVOL	2	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE2-A654	8/23/2013	GW	Bromomethane	TVOL	0.14	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE2-A654	8/23/2013	GW	Chlorobenzene	TVOL	1.2	µg/L	J	Surr<LCL		J	J		
Y8ZZ6	EE2-A654	8/23/2013	GW	M,P-XYLENE	TVOL	0.16	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE2-A654	8/23/2013	GW	O-xylene	TVOL	0.13	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE2-A654	8/23/2013	GW	Vinyl Bromide	TVOL	3.7	µg/L	J	Surr<LCL		J	J		
Y8ZZ6	EE2-A654	8/23/2013	GW	Vinyl Chloride	TVOL	0.25	µg/L	J	Surr>UCL		J	J	J	J
Y8ZZ6	EE3-A654	8/23/2013	GW	4-METHYL-2-PENTANONE (PENT	TVOL	1.2	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE3-A654	8/23/2013	GW	Benzene	TVOL	1.6	µg/L	J	Surr<LCL		J	J		
Y8ZZ6	BB2-A654	8/23/2013	GW	Acetone	TVOL	2.1	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	EE3-A654	8/23/2013	GW	M,P-XYLENE	TVOL	0.12	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	EE3-A654	8/23/2013	GW	Toluene	TVOL	0.22	µg/L	J	Surr<LCL		J	J	J	J
Y9017	EE4-A654	8/23/2013	GW	Benzene	TVOL	11	µg/L	J	Surr>UCL	J	J	J		
Y9017	EE4-A654	8/23/2013	GW	CARBON DISULFIDE	TVOL	0.59	µg/L	J	Surr<LCL		J	J		
Y9017	FF1-A654	8/23/2013	GW	Acetone	TVOL	2.1	µg/L	U	Blank>CL		U	U	J	JB
Y9017	EE4-A654	8/23/2013	GW	M,P-XYLENE	TVOL	0.29	µg/L	J	Surr<LCL		J	J	J	J
Y9013	GG1-A654	9/13/2013	GW	Acetone	TVOL	2.1	µg/L	U	Blank>CL		U	U	J	J
Y9017	EE5-A654	8/23/2013	GW	Benzene	TVOL	0.13	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	AA1-A654	8/19/2013	GW	Acetone	TVOL	2	µg/L	U	Blank>CL		U	U	J	JB
Y9017	EE5-D654	8/23/2013	QCwater	Chloroform	TVOL	0.15	µg/L	J	Surr<LCL		J	J	J	J
Y9017	EE5-D654	8/23/2013	QCwater	Toluene	TVOL	0.067	µg/L	J	Surr<LCL		J	J	J	J
13238A	FF1-B654	8/23/2013	GW	1,2-Dibromoethane (EDB)	E524.2SIM	0.004	µg/L	J	conc<RL		J		J	J,C1
13238A	FF1-A654	8/23/2013	GW	1,2-Dibromoethane (EDB)	E524.2SIM	0.004	µg/L	J	conc<RL		J		J	J,C1
Y9017	FF1-B654	8/23/2013	GW	Acetone	TVOL	2	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD2-A654	8/21/2013	GW	Acetone	TVOL	1.9	µg/L	U	Blank>CL		U	U	J	JB
Y9017	FF1-B654	8/23/2013	GW	Benzene	TVOL	0.47	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-A654	8/23/2013	GW	Benzene	TVOL	0.49	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-B654	8/23/2013	GW	Chlorobenzene	TVOL	0.18	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-A654	8/23/2013	GW	Chlorobenzene	TVOL	0.16	µg/L	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC6-D654	8/22/2013	QCwater	Acetone	TVOL	1.9	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	BB3-A654	8/23/2013	GW	Acetone	TVOL	1.9	µg/L	U	Blank>CL		U	U	J	JB
Y9017	FF1-B654	8/23/2013	GW	M,P-XYLENE	TVOL	0.075	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-A654	8/23/2013	GW	M,P-XYLENE	TVOL	0.079	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-B654	8/23/2013	GW	Toluene	TVOL	0.12	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-A654	8/23/2013	GW	Toluene	TVOL	0.14	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-B654	8/23/2013	GW	Vinyl Bromide	TVOL	0.052	µg/L	J	Surr<LCL		J	J	J	J
Y9017	FF1-A654	8/23/2013	GW	Vinyl Bromide	TVOL	0.055	µg/L	J	Surr<LCL		J	J	J	J
Y9017	SB07-A655-05	8/26/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOI	2.9	µg/kg	J	Surr<LCL		J	J	J	J
Y9017	SB07-A655-20	8/27/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOI	4.6	µg/kg	J	Surr<LCL		J	J	J	J
Y9017	SB07-A655-15	8/27/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOI	5.1	µg/kg	J	Surr<LCL		J	J	J	J
Y9017	SB07-A655-15	8/27/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOI	5.4	µg/kg	J	Surr<LCL		J	J	J	J
Y9017	EE5-D654	8/23/2013	QCwater	Acetone	TVOL	1.9	µg/L	U	Blank>CL		U	U	J	JB
Y9013	DD6-A654	9/12/2013	GW	Acetone	TVOL	1.9	µg/L	U	Blank>CL		U	U	J	J
Y9017	SB09-A655-30	8/28/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOI	4.9	µg/kg	J	Surr<LCL		J	J	J	J
Y9017	SB09-A655-02	8/28/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOI	5.5	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB09-B655-70	8/29/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOI	5	µg/kg	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC4-A654	8/21/2013	GW	Acetone	TVOL	1.8	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD1-A654	8/21/2013	GW	Acetone	TVOL	1.7	µg/L	U	Blank>CL		U	U	J	JB
Y90B9	SB12-A655-60	9/3/2013	Soil	Acetone	SOM01.2_CVOI	1.7	µg/kg	U	Blank>CL		U	U	J	JB
Y9013	GG4-A654	9/13/2013	GW	Acetone	TVOL	1.7	µg/L	U	Blank>CL		U	U	J	J
Y8ZZ6	CC5-A654	8/21/2013	GW	Acetone	TVOL	1.5	µg/L	U	Blank>CL		U	U	J	JB
Y90A3	SB12-A655-05	8/30/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOI	3	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB12-A655-10	8/30/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOI	8.5	µg/kg	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD1-B654	8/21/2013	GW	Acetone	TVOL	1.5	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC6-A654	8/22/2013	GW	Acetone	TVOL	1.5	µg/L	U	Blank>CL		U	U	J	JB
Y9013	DD5-A654	9/12/2013	GW	Acetone	TVOL	9.8	µg/L	U	Blank>CL		U	U		
Y90A3	SB12-B655-02	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	0.71	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB14-A655-70	8/30/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOI	4.9	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB14-A655-80	8/30/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOI	6.5	µg/kg	J	Surr<LCL		J	J	J	J
Y9013	GG4-D654	9/13/2013	QCwater	Acetone	TVOL	5.7	µg/L	U	Blank>CL		U	U		
Y90B6	SB15-B655-78	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.9	µg/kg	U	Blank>CL		U	U	J	JB
Y90B6	SB17-B655-40	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.87	µg/kg	U	Blank>CL		U	U	J	J
Y90A3	SB14-A655-70	8/30/2013	Soil	Benzene	SOM01.2_CVOI	1	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB14-B655-50	8/30/2013	Soil	Toluene	SOM01.2_CVOI	0.62	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB12-A655-05	8/30/2013	Soil	Acetone	SOM01.2_CVOI	11	µg/kg	U	Blank>CL		U	U		B
Y90B1	SB11-A655-10	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.86	µg/kg	U	Blank>CL		U	U	J	JB
Y90B1	SB15-A655-50	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.86	µg/kg	U	Blank>CL		U	U	J	JB
Y90B1	SB15-A655-60	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.86	µg/kg	U	Blank>CL		U	U	J	JB
Y90B6	SB17-A655-40	9/12/2013	Soil	Toluene	SOM01.2_CVOI	0.8	µg/kg	U	Blank>CL		U	U	J	JB
Y90B9	SB12-A655-70	9/3/2013	Soil	Benzene	SOM01.2_CVOI	2.2	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB12-A655-80	9/3/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOI	2.4	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB12-A655-30	9/3/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.86	µg/kg	J	Surr<LCL		J	J	J	J
Y90A3	SB12-A655-50	9/3/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.67	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB16-A655-20	9/3/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOI	2	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB16-A655-20	9/3/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.5	µg/kg	J	Surr<LCL		J	J	J	J
Y90B1	SB15-A655-40	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.7	µg/kg	U	Blank>CL		U	U	J	JB

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B9	SB16-A655-60	9/4/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOl	2.3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB16-A655-40	9/4/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	7.2	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB16-A655-70	9/4/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	8.6	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB15-A655-70	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.7	µg/kg	U	Blank>CL		U	U	J	JB
Y90A3	SB14-B655-50	8/30/2013	Soil	Acetone	SOM01.2_CVOl	11	µg/kg	U	Blank>CL		U	U		B
Y90B9	SB16-A655-80	9/4/2013	Soil	Benzene	SOM01.2_CVOl	1.3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB18-A655-18	9/4/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOl	2.3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB18-A655-18	9/4/2013	Soil	Toluene	SOM01.2_CVOl	0.73	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB08-B655-06	9/5/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOl	2.5	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB08-A655-06	9/5/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOl	2.4	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB08-B655-06	9/5/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOl	3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB08-A655-02	9/5/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOl	3.5	µg/kg	J	Surr<LCL		J	J	J	J
Y90B9	SB08-A655-06	9/5/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOl	3.3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B1	SB11-A655-40	9/10/2013	Soil	Acetone	SOM01.2_CVOl	16	µg/kg	U	Blank>CL		U	U		B
Y90D3	SB18-A655-60	9/5/2013	Soil	Acetone	SOM01.2_CVOl	17	µg/kg	U	Blank>CL		U	U		B
Y90D3	SB08-A655-60	9/6/2013	Soil	Acetone	SOM01.2_CVOl	10	µg/kg	U	Blank>CL		U	U		B
Y90D3	SB18-A655-60	9/5/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	3.3	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB18-A655-70	9/5/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	9.4	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB18-A655-40	9/5/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOl	3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB15-A655-78	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.64	µg/kg	U	Blank>CL		U	U	J	JB
Y90B6	SB11-A655-70	9/11/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.64	µg/kg	U	Blank>CL		U	U	J	JB
Y90D3	SB18-A655-80	9/5/2013	Soil	Benzene	SOM01.2_CVOl	0.93	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB08-A655-60	9/6/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	2.7	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB13-A655-20	9/11/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.6	µg/kg	U	Blank>CL		U	U	J	JB
Y90B1	SB11-A655-30	9/10/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.51	µg/kg	U	Blank>CL		U	U	J	JB
Y90D3	SB08-A655-80	9/6/2013	Soil	Benzene	SOM01.2_CVOl	0.96	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB08-B655-80	9/6/2013	Soil	Toluene	SOM01.2_CVOl	0.59	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB10-A655-02	9/6/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	3.4	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB10-A655-40	9/6/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	7.5	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB10-A655-04	9/6/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOl	1.9	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB10-A655-04	9/6/2013	Soil	4-METHYL-2-PENTANONE (PENT	SOM01.2_CVOl	2.4	µg/kg	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC1-A654	8/22/2013	GW	CARBON DISULFIDE	TVOL	0.45	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y9013	GG2-A654	9/12/2013	GW	CARBON DISULFIDE	TVOL	0.41	µg/L	U	Blank>CL		U	U	J	J
Y8ZZ6	BB2-A654	8/23/2013	GW	CARBON DISULFIDE	TVOL	0.33	µg/L	U	Blank>CL		U	U	J	JB
Y90D3	SB10-A655-40	9/6/2013	Soil	Toluene	SOM01.2_CVOl	0.6	µg/kg	J	Surr<LCL		J	J	J	J
Y90D3	SB06-A655-04	9/9/2013	Soil	2-HEXANONE (METHYL N-BUTYI	SOM01.2_CVOl	2.7	µg/kg	J	Surr<LCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	Dichloromethane	TVOL	0.28	µg/L	U	Blank>CL		U	U	J	J
Y90B1	SB11-A655-40	9/10/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	5	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB10-A655-70	9/9/2013	Soil	Chlorobenzene	SOM01.2_CVOl	2.3	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB06-B655-40	9/9/2013	Soil	Chloroform	SOM01.2_CVOl	0.59	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB06-A655-40	9/9/2013	Soil	Chloroform	SOM01.2_CVOl	0.6	µg/kg	J	Surr>UCL		J	J	J	J
Y8ZZ6	CC2-A654	8/20/2013	GW	CARBON DISULFIDE	TVOL	0.23	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC3-A654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.18	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y90B1	SB10-A655-60	9/9/2013	Soil	Chloroform	SOM01.2_CVOl	0.55	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB15-A655-11	9/9/2013	Soil	Chloroform	SOM01.2_CVOl	0.56	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB11-A655-60	9/10/2013	Soil	Chloroform	SOM01.2_CVOl	0.56	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB06-B655-40	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.79	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB06-A655-40	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.72	µg/kg	J	Surr>UCL		J	J	J	J
Y90B1	SB10-B655-60	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.71	µg/kg	J	Surr>UCL		J	J	J	J
Y8ZZ6	DD1-A654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.13	µg/L	U	Blank>CL		U	U	J	JB
Y90B1	SB10-A655-60	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.61	µg/kg	J	Surr>UCL		J	J	J	J
Y8ZZ6	DD1-B654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.12	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	DD3-A654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.12	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y90B6	SB15-A655-78	9/10/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	10	µg/kg	J	Surr<LCL		J	J	J	J
Y8ZZ6	DD4-A654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.12	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y8ZZ6	DD2-A654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.11	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y8ZZ6	BB3-A654	8/23/2013	GW	CARBON DISULFIDE	TVOL	0.11	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y8ZZ6	FF3-C654	8/21/2013	QCwater	CARBON DISULFIDE	TVOL	0.098	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y8ZZ6	CC5-A654	8/21/2013	GW	CARBON DISULFIDE	TVOL	0.095	µg/L	U	Blank>CL		U	U	J	JB
Y8ZZ6	CC6-D654	8/22/2013	QCwater	CARBON DISULFIDE	TVOL	0.086	µg/L	U	Blank>CL		U	U	J	JB
Y9017	EE5-A654	8/23/2013	GW	CARBON DISULFIDE	TVOL	0.084	µg/L	U	Blank>CL		UJ	UJ	J	JB
Y90B6	SB11-A655-70	9/11/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	4.3	µg/kg	J	Surr<LCL		J	J	J	J
Y8ZZ6	CC6-A654	8/22/2013	GW	CARBON DISULFIDE	TVOL	0.079	µg/L	U	Blank>CL		U	U	J	JB
Y90B6	SB13-A655-50	9/11/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	5.6	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB13-A655-60	9/11/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	5.3	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB13-A655-79	9/11/2013	Soil	2-Butanone (MEK)	SOM01.2_CVOl	5.5	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB13-A655-30	9/11/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOl	2.8	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB17-A655-50	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.87	µg/kg	U	Blank>CL		U	U	J	J
Y90B6	SB17-A655-59	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.82	µg/kg	U	Blank>CL		UJ	UJ	J	J
Y9013	DD5-A654	9/12/2013	GW	1,2-Dichloropropane (DCP)	TVOL	0.23	µg/L	J	Surr>UCL		J	J	J	J
Y9013	DD5-A654	9/12/2013	GW	2-Butanone (MEK)	TVOL	2.1	µg/L	J	Surr>UCL		J	J	J	J
Y9013	DD5-A654	9/12/2013	GW	Bromomethane	TVOL	0.19	µg/L	J	Surr>UCL		J	J	J	J
Y9013	DD5-A654	9/12/2013	GW	Chlorobenzene	TVOL	0.11	µg/L	J	Surr>UCL		J	J	J	J
Y9013	DD5-A654	9/12/2013	GW	Chloromethane	TVOL	1.3	µg/L	J	Surr>UCL		J	J		
Y90B6	SB17-A655-30	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.78	µg/kg	U	Blank>CL		U	U	J	J
Y9013	DD5-A654	9/12/2013	GW	Vinyl Chloride	TVOL	0.1	µg/L	J	Surr>UCL		J	J	J	J
Y90B6	SB17-A655-40	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOl	0.73	µg/kg	U	Blank>CL		U	U	J	J
13259A	GG2-A654	9/12/2013	GW	1,2,3-Trichloropropane (TCP)	E524.2SIM	0.01	µg/L	J	ISarea>CL	J	J		J	J
Y9013	GG2-A654	9/12/2013	GW	1,2-Dichlorobenzene	TVOL	0.26	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	1,3-Dichlorobenzene	TVOL	0.31	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	1,4-Dichlorobenzene	TVOL	0.26	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	2-HEXANONE (METHYL N-BUTYI	TVOL	2.4	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	4-METHYL-2-PENTANONE (PENT	TVOL	2.2	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	Benzene	TVOL	36	µg/L	J	Surr>UCL		J	J	J	J D

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B6	SB17-A655-20	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.72	µg/kg	U	Blank>CL		U	U	J	J
Y9013	GG2-A654	9/12/2013	GW	Chloroform	TVOL	24	µg/L	J	>IcalRange	J	JE	J	E	E
Y90B6	SB17-A655-14	9/12/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.66	µg/kg	U	Blank>CL		UJ	UJ	J	J
Y9013	GG2-A654	9/12/2013	GW	Toluene	TVOL	0.44	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	Vinyl Bromide	TVOL	0.067	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG2-A654	9/12/2013	GW	Vinyl Chloride	TVOL	0.098	µg/L	J	Surr>UCL		J	J	J	J
Y90B6	SB17-A655-14	9/12/2013	Soil	Chloroform	SOM01.2_CVOI	0.69	µg/kg	J	Surr<LCL		J	J	J	J
Y90B6	SB13-A655-60	9/11/2013	Soil	Dichloromethane	SOM01.2_CVOI	0.52	µg/kg	U	Blank>CL		UJ	UJ	J	J
Y9017	FF1-A654	8/23/2013	GW	Chloromethane	TVOL	0.49	µg/L	U	Blank>CL		UJ	UJ	J	J
Y9017	FF1-B654	8/23/2013	GW	Chloromethane	TVOL	0.41	µg/L	U	Blank>CL		UJ	UJ	J	J
Y9017	EE4-A654	8/23/2013	GW	Chloromethane	TVOL	0.31	µg/L	U	Blank>CL		UJ	UJ	J	J
Y9017	FF3-A654	8/22/2013	GW	CARBON DISULFIDE	TVOL	0.26	µg/L	U	Blank>CL		UJ	UJ	J	J
Y8ZZ6	DD4-A654	8/21/2013	GW	Chloromethane	TVOL	0.25	µg/L	U	Blank>CL		UJ	UJ	J	J
Y8ZZ6	DD3-A654	8/21/2013	GW	Chloromethane	TVOL	0.19	µg/L	U	Blank>CL		UJ	UJ	J	J
Y8ZZ6	EE3-A654	8/23/2013	GW	CARBON DISULFIDE	TVOL	0.18	µg/L	U	Blank>CL		U	U	J	J
Y8ZZ6	CC3-A654	8/21/2013	GW	Chloromethane	TVOL	0.16	µg/L	U	Blank>CL		UJ	UJ	J	J
Y9013	GG1-A654	9/13/2013	GW	Benzene	TVOL	0.092	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG1-A654	9/13/2013	GW	Chloroform	TVOL	0.23	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG1-A654	9/13/2013	GW	M,P-XYLENE	TVOL	0.086	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG1-A654	9/13/2013	GW	Toluene	TVOL	0.16	µg/L	J	Surr>UCL		J	J	J	J
Y9013	GG4-A654	9/13/2013	GW	1,2,3-Trichloropropane (TCP)	TVOL	0.63	µg/L	J	CCV>CL		J	J		
Y9013	GG4-A654	9/13/2013	GW	1,3-Dichloropropane	TVOL	0.06	µg/L	J	Surr>UCL		J	J	J	J
Y9013	DD5-A654	9/12/2013	GW	Dichloromethane	TVOL	0.12	µg/L	U	Blank>CL		U	U	J	J
Y9013	GG4-A654	9/13/2013	GW	tert-Butyl Methyl Ether (MTBE)	TVOL	0.15	µg/L	J	Surr>UCL		J	J	J	J
13234A	DD3-A654	8/21/2013	GW	1,2-Dibromoethane (EDB)	E524.2SIM	0.002	µg/L	UJ	conc<RL		UJ		U	U,C1,J
13238A	EE4-A654	8/23/2013	GW	1,2,3-Trichloropropane (TCP)	E524.2SIM	0.002	µg/L	UJ	ISarea>CL		UJ		U	U,J,Q1
13238A	EE4-A654	8/23/2013	GW	1,2-Dibromo-3-Chloropropane (	E524.2SIM	0.005	µg/L	UJ	ISarea>CL		UJ		U	U,J,Q1
13238A	EE4-A654	8/23/2013	GW	1,2-Dibromoethane (EDB)	E524.2SIM	0.002	µg/L	UJ	ISarea>CL		UJ		U	U,J,Q1
13238A	EE3-A654	8/23/2013	GW	1,2,3-Trichloropropane (TCP)	E524.2SIM	0.002	µg/L	UJ	Surr<LCL		UJ		U	U,J,Q7
13238A	EE3-A654	8/23/2013	GW	1,2-Dibromo-3-Chloropropane (	E524.2SIM	0.005	µg/L	UJ	Surr<LCL		UJ		U	U,J,Q7
13238A	EE3-A654	8/23/2013	GW	1,2-Dibromoethane (EDB)	E524.2SIM	0.002	µg/L	UJ	Surr<LCL		UJ		U	U,J,Q7
Y8ZZ6	AA1-A654	8/19/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC2-A654	8/20/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC2-A654	8/20/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC2-A654	8/20/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC2-A654	8/20/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC3-A654	8/21/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC3-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC3-A654	8/21/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC3-A654	8/21/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC4-A654	8/21/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC4-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC4-A654	8/21/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC4-A654	8/21/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC5-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD1-B654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD1-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD2-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD3-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD4-A654	8/21/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD4-A654	8/21/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
	SB07-A655-02	8/26/2013	Soil	1,2,3-Trichloropropane (TCP)	8260C	0.062	µg/Kg	UJ	HT>CL	UJ			U	CU
	SB07-A655-05	8/26/2013	Soil	1,2,3-Trichloropropane (TCP)	8260C	0.061	µg/Kg	UJ	HT>CL	UJ			U	CU
Y8ZZ6	DD4-A654	8/21/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	DD4-A654	8/21/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	FF3-C654	8/21/2013	QCwater	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
	SB07-A655-02	8/26/2013	Soil	1,2-Dibromo-3-Chloropropane (	8260C	0.37	µg/Kg	UJ	HT>CL	UJ			U	CU
	SB07-A655-05	8/26/2013	Soil	1,2-Dibromo-3-Chloropropane (	8260C	0.36	µg/Kg	UJ	HT>CL	UJ			U	CU
	SB07-A655-02	8/26/2013	Soil	1,2-Dibromoethane (EDB)	8260C	0.037	µg/Kg	UJ	HT>CL	UJ			U	CU
Y8ZZ6	CC1-A654	8/22/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC6-D654	8/22/2013	QCwater	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	CC6-A654	8/22/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y9017	FF2-A654	8/22/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y9017	FF2-A654	8/22/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y9017	FF3-A654	8/22/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-B654	8/23/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-A654	8/23/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-B654	8/23/2013	GW	1,1-Dichloroethylene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-A654	8/23/2013	GW	1,1-Dichloroethylene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-B654	8/23/2013	GW	cis-1,2-Dichloroethylene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-A654	8/23/2013	GW	cis-1,2-Dichloroethylene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-B654	8/23/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-A654	8/23/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-B654	8/23/2013	GW	trans-1,2-Dichloroethylene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-A654	8/23/2013	GW	trans-1,2-Dichloroethylene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-B654	8/23/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB1-A654	8/23/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB2-A654	8/23/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	BB3-A654	8/23/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,1-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,2,3-Trichlorobenzene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,2,4-Trichlorobenzene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,2-Dichlorobenzene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y8ZZ6	EE2-A654	8/23/2013	GW	1,3-Dichlorobenzene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,3-Dichloropropane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1,4-Dichlorobenzene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	1-CHLOROPROPANE	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	2-Bromo-1-chloropropane	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	2-CHLOROPROPANE	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
Y8ZZ6	EE2-A654	8/23/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL		UJ	UJ	U	U
	SB07-A655-05	8/26/2013	Soil	1,2-Dibromoethane (EDB)	8260C	0.036	µg/Kg	UJ	HT>CL	UJ			U	CU
13259A	GG2-A654	9/12/2013	GW	1,2-Dibromo-3-Chloropropane (	E524.2SIM	0.005	µg/L	UJ	ISarea>CL	UJ	UJ		U	U,J
13259A	GG2-A654	9/12/2013	GW	1,2-Dibromoethane (EDB)	E524.2SIM	0.002	µg/L	UJ	ISarea>CL	UJ	UJ		U	U,J
Y9017	FF2-A654	8/22/2013	GW	1,1,2-Trichloroethane	TVOL	0.5	µg/L	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	FF2-A654	8/22/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL	UJ	U	U	U	U
Y9017	FF3-A654	8/22/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL	UJ	U	U	U	U
Y9017	FF3-A654	8/22/2013	GW	cis-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	FF3-A654	8/22/2013	GW	trans-1,3-Dichloropropene	TVOL	0.5	µg/L	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	EE4-A654	8/23/2013	GW	2,3-Dibromopropene	TVOL	0.5	µg/L	UJ	Surr<LCL	UJ	U	U	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Benzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Bromodichloromethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Chlorobenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Chlorobenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	CYCLOHEXANE	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Dichloromethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Dichloromethane	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Ethylbenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Ethylbenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Isopropylbenzene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Isopropylbenzene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	M,P-XYLENE	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	M,P-XYLENE	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	METHYL ACETATE	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	METHYL ACETATE	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	O-xylene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	O-xylene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Styrene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Styrene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Tetrachloroethene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Tetrachloroethene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Toluene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Toluene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Trichloroethylene	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Trichloroethylene	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-05	8/26/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOl	5.1	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-02	8/26/2013	Soil	Vinyl Bromide	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOl	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOl	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-15	8/27/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOl	6	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOl	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-15	8/27/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOl	6	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOl	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOl	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOl	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-15	8/27/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOl	6	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOl	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y9017	SB07-A655-20	8/27/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-15	8/27/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-15	8/27/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-15	8/27/2013	Soil	Chlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	Chlorobenzene	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	Dichloromethane	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-20	8/27/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB07-A655-30	8/27/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-02	8/28/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-05	8/28/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-02	8/28/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-05	8/28/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-02	8/28/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-05	8/28/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-02	8/28/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-05	8/28/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-02	8/28/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-05	8/28/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Benzene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Bromodichloromethane	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-02	8/28/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.5	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-05	8/28/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	O-xylene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Styrene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Toluene	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,1-Dichloroethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Benzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Bromochloromethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Bromodichloromethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Bromoform	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Chlorobenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Chloroform	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Dichloromethane	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	Dichloromethane	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Ethylbenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	O-xylene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Styrene	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90A3	SB09-A655-80	8/29/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Tetrachloroethene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Toluene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Trichloroethylene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-80	8/29/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	6.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB09-A655-60	8/29/2013	Soil	Vinyl Bromide	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Benzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Benzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Benzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Benzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Bromoform	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Bromoform	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Bromoform	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90A3	SB12-A655-02	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Chloroform	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Chloroform	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Chloroform	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Dichloromethane	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Dichloromethane	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	O-xylene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	O-xylene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	O-xylene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	O-xylene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	O-xylene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Styrene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Styrene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Styrene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Styrene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Styrene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Toluene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Toluene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Toluene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Toluene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Toluene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-B655-02	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-02	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-05	8/30/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-10	8/30/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-20	8/30/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90A3	SB14-A655-80	8/30/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Benzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Benzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Bromodichloromethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90A3	SB14-B655-50	8/30/2013	Soil	Bromoform	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Bromoform	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Bromoform	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Bromoform	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Bromoform	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Chloroform	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Chloroform	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Chloroform	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Chloroform	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Chloroform	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	Dichloromethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	O-xylene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	O-xylene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	O-xylene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	O-xylene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	O-xylene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Styrene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Styrene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Styrene	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Styrene	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Styrene	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90A3	SB14-B655-50	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Toluene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Toluene	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Toluene	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Toluene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-B655-50	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-30	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-60	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.8	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-80	8/30/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-40	8/30/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-50	8/30/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	6.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB14-A655-70	8/30/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,1-Dichloroethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	1,1-Dichloroethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Benzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Benzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Bromochloromethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	Bromochloromethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Bromodichloromethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Bromodichloromethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Bromoform	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	Bromoform	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Chloroform	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B9	SB12-A655-70	9/3/2013	Soil	Chloroform	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	Dichloromethane	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	O-xylene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	O-xylene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Styrene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Styrene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Toluene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Toluene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-30	9/3/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-60	9/3/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB12-A655-70	9/3/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-50	9/3/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90A3	SB12-A655-40	9/3/2013	Soil	Vinyl Chloride	SOM01.2_CVOI	5.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,1-Dichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Benzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Bromochloromethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Bromoform	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Chlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Chloroform	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Ethylbenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	O-xylene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Styrene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Toluene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Trichloroethylene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-20	9/3/2013	Soil	Vinyl Chloride	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,1-Dichloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B9	SB16-A655-80	9/4/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Benzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Bromoform	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Bromoform	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Chloroform	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Chloroform	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	Dichloromethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	Dichloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	Dichloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Dichloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Dichloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	O-xylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Styrene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Toluene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-40	9/4/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-50	9/4/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-60	9/4/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-80	9/4/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB16-A655-70	9/4/2013	Soil	Vinyl Bromide	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B9	SB18-A655-30	9/4/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Bromochloromethane	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Bromodichloromethane	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Bromoform	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Chlorodibromomethane	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Chloroform	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	CYCLOHEXANE	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Dichloromethane	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Ethylbenzene	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	O-xylene	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Styrene	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Trichloroethylene	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB18-A655-30	9/4/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	4.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Chlorobenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Dichloromethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	O-xylene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	O-xylene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	O-xylene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	O-xylene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	O-xylene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Styrene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Styrene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Styrene	SOM01.2_CVOI	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	Styrene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	Styrene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B9	SB08-A655-06	9/5/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Toluene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Toluene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Toluene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	Toluene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	Toluene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-20	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-30	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-B655-06	9/5/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-06	9/5/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B9	SB08-A655-10	9/5/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Dichloromethane	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	O-xylene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	O-xylene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	O-xylene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Styrene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	Styrene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	Styrene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Toluene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	Toluene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	Toluene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-40	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-A655-80	9/5/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB18-B655-70	9/5/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Dichloromethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	METHYL ACETATE	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	O-xylene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	O-xylene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	O-xylene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	Styrene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Styrene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	Styrene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Toluene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	Toluene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-B655-80	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-70	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB08-A655-80	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90D3	SB08-A655-70	9/6/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	6.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,1-Dichloroethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,3-Dichloropropane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Benzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Benzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Benzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Bromochloromethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Bromochloromethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Bromodichloromethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Bromoform	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Bromoform	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Bromomethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	CARBON DISULFIDE	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Chlorobenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Chlorobenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Chloroethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Chloroform	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Chloroform	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90D3	SB10-A655-10	9/6/2013	Soil	Chloromethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Dichlorodifluoromethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Dichloromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Dichloromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Dichloromethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Dichloromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Dichloromethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Ethylbenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	METHYL ACETATE	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	O-xylene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	O-xylene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	O-xylene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	O-xylene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	O-xylene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	O-xylene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Styrene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Styrene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Styrene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	Styrene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Styrene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Styrene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Toluene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Toluene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Toluene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	Toluene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Toluene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Toluene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-20	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	4.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Trichloroethylene	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-02	9/6/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-04	9/6/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-50	9/6/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Vinyl Bromide	SOM01.2_CVO	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-30	9/6/2013	Soil	Vinyl Bromide	SOM01.2_CVO	5.3	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90D3	SB10-A655-50	9/6/2013	Soil	Vinyl Bromide	SOM01.2_CVOI	5	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB10-A655-10	9/6/2013	Soil	Vinyl Chloride	SOM01.2_CVOI	6.6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Chlorobenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Dichloromethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Ethylbenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Isopropylbenzene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	M,P-XYLENE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	METHYL ACETATE	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	O-xylene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	O-xylene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	O-xylene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Styrene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Styrene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Styrene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Toluene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Toluene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Toluene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Trichloroethylene	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-02	9/9/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-04	9/9/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90D3	SB06-A655-10	9/9/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,1,2,2-Tetrachloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,1-Dichloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,1-Dichloroethylene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2,3-Trichloropropane (TCP)	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2-Dibromo-3-Chloropropane (	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2-Dichloroethane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,2-Dichloropropane (DCP)	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,3-Dichloropropane	SOM01.2_CVOI	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B1	SB10-A655-80	9/9/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	1,4-DIOXANE (P. DIOXANE)	SOM01.2_CVO	110	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Benzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Bromochloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Bromodichloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Bromoform	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Bromomethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	CARBON DISULFIDE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Chlorodibromomethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Chloroethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Chloroform	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Chloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	cis-1,2-Dichloroethylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	CYCLOHEXANE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Dichlorodifluoromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Dichloromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Ethylbenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Isopropylbenzene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	M,P-XYLENE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	METHYLCYCLOHEXANE	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	O-xylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Styrene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Tetrachloroethene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Toluene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	trans-1,2-Dichloroethylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Vinyl Bromide	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB10-A655-80	9/9/2013	Soil	Vinyl Chloride	SOM01.2_CVO	5.4	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB11-A655-10	9/10/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB11-A655-10	9/10/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB11-A655-10	9/10/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB11-A655-10	9/10/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB11-A655-10	9/10/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B1	SB11-A655-10	9/10/2013	Soil	Chlorobenzene	SOM01.2_CVO	6	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB13-A655-60	9/11/2013	Soil	Trichlorofluoromethane	SOM01.2_CVO	5.2	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Trichloroethylene	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y9017	SB09-A655-20	8/28/2013	Soil	Vinyl Bromide	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL	UJ	UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	1,1,1-Trichloroethane	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	1,1,2-Trichloro-1,2,2-Trifluoroet	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,1,2-Trichloroethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-20	9/12/2013	Soil	1,2,3-Trichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-20	9/12/2013	Soil	1,2,4-Trichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	1,2-Dibromoethane (EDB)	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-20	9/12/2013	Soil	1,2-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	1,2-Dichloroethane	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-20	9/12/2013	Soil	1,3-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-20	9/12/2013	Soil	1,4-Dichlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	Carbon Tetrachloride (CCL4)	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Chlorobenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-20	9/12/2013	Soil	Chlorobenzene	SOM01.2_CVO	5.1	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	cis-1,3-Dichloropropene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Ethylbenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Isopropylbenzene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	M,P-XYLENE	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	METHYL ACETATE	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	METHYL ACETATE	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	O-xylene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Styrene	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	tert-Butyl Methyl Ether (MTBE)	SOM01.2_CVO	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

TABLE E-2
Data Validation Summary
Frontier Fertilizer Superfund Site, Davis, California

SDG	SampleID	Sample Date	Matrix	Analyte	Method	Result	Units	Final Val Flag	Reason Code	Tier 2/3 EPA QAO Val Flags	Tier1/CLP CADRE Val Flags	EReview_ Qual	Conc Qual	Lab Flags
Y90B6	SB17-A655-14	9/12/2013	Soil	Tetrachloroethene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Toluene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	trans-1,3-Dichloropropene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Trichloroethylene	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-14	9/12/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	4.7	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U
Y90B6	SB17-A655-59	9/12/2013	Soil	Trichlorofluoromethane	SOM01.2_CVOI	5.9	µg/kg	UJ	Surr<LCL		UJ	UJ	U	U

Notes:

U	Analyte was not detected and associated result is the quantitation limit.
J	The reported result for this analyte should be considered an estimated value.
µg/L	Micrograms per liter
µg/kg	Micrograms per kilograms
Surr<LCL	Surrogate recovery below lower criteria limit
Surr >UCL	Surrogate recovery above upper criteria limit
ISarea>CL	Internal Standard area counts outside criteria
HT>CL	Hold Time exceeds method criteria
Blank>CL	Blank detect exceeds control limit
CCV>CL	Continuing Calibration Verification outside criteria
>Icalrange	Sample concentration exceeds Calibration Range
Conc<RL	Sample concentration detected below the reporting limit

TABLE E-3a

Summary of Field Duplicate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Well ID	Sample Date	Method	Analyte	Sample Result (µg/L)		Duplicate Result (µg/L)		Relative Percent Difference (%)
BB-1	8/23/2013	5242SIM	1,2,3-Trichloropropane (TCP)	0.005	U	0.006		
		TVOL	1,2-Dichloropropane (DCP)	0.45	J	0.47	J	4.3
		TVOL	2-Butanone (MEK)	5	U	1.5	J	
		TVOL	Benzene	0.22	J	0.2	J	9.5
		TVOL	CARBON DISULFIDE	1.3	J	1.4	J	7.4
		TVOL	Toluene	0.12	J	0.12	J	0
DD-1	8/21/2013	TVOL	1,2-Dichloropropane (DCP)	3.7		3.7		0
		TVOL	Chloroform	0.17	J	0.18	J	5.7
FF-1	8/23/2013	5242SIM	1,2,3-Trichloropropane (TCP)	0.4		0.39		2.5
		5242SIM	1,2-Dibromoethane (EDB)	0.004	J	0.004	J	0
		TVOL	1,2-Dichloropropane (DCP)	1.2		1.3		8
		TVOL	Benzene	0.49	J	0.47	J	4.2
		TVOL	Chlorobenzene	0.16	J	0.18	J	11.8
		TVOL	M,P-XYLENE	0.079	J	0.075	J	5.2
		TVOL	Toluene	0.14	J	0.12	J	15.4
		TVOL	Vinyl Bromide	0.055	J	0.052	J	5.6

NOTES:

U Analyte was not detected and associated result is the quantitation limit.

J The reported result for this analyte should be considered an estimated value.

µg/L Micrograms per liter

5242SIM 524.2 SIM (Low level TCP)

TVOL Method TVOL (Trace Volatiles)

TABLE E-3b
Summary of Field Duplicate Results, Soil
Frontier Fertilizer Superfund Site, Davis, California

Well ID	Depth	Sample Date	Method	Analyte	Units	Sample Result	Duplicate Result	Relative Percent Difference (%)
SB-06	40	9/9/2013	CVOL	Chloroform	ug/kg	0.6 J	0.59 J	1.7
	40	9/9/2013	CVOL	Dichloromethane	µg/kg	0.72 J	0.79 J	9.3
SB-08	6	9/5/2013	CVOL	1,2-Dichloropropane (DCP)	µg/kg	7	5.1 U	--
	6	9/5/2013	CVOL	2-Butanone (MEK)	µg/kg	41	46	11.5
	6	9/5/2013	CVOL	2-HEXANONE (METHYL N-BUTYL KETONE)	µg/kg	2.4 J	2.5 J	4.1
	6	9/5/2013	CVOL	4-METHYL-2-PENTANONE (PENTANONE)	µg/kg	3.3 J	3 J	9.5
	6	9/5/2013	CVOL	Acetone	µg/kg	200	220	9.5
	80	9/6/2013	CVOL	2-Butanone (MEK)	µg/kg	18	15	18.2
	80	9/6/2013	CVOL	Acetone	µg/kg	180	120	40.0
	80	9/6/2013	CVOL	Benzene	µg/kg	0.96 J	4.9 U	--
	80	9/6/2013	CVOL	Toluene	µg/kg	4.9 U	0.59 J	--
SB-09	70	8/28/2013	CVOL	2-Butanone (MEK)	µg/kg	11 U	5 J	--
	70	8/29/2013	CVOL	Acetone	µg/kg	8.9 UJ	40	--
SB-10	60	9/9/2013	CVOL	Chloroform	µg/kg	0.55 J	5.4 U	
	60	9/9/2013	CVOL	Dichloromethane	µg/kg	0.61 J	0.71 J	15.2
SB-12	2	8/30/2013	CVOL	Trichloroethylene	µg/kg	6.1 UJ	0.71 J	--
SB-13	20	9/11/2013	CVOL	2-Butanone (MEK)	µg/kg	56	49	13.3
	20	9/11/2013	CVOL	Acetone	ug/kg	290	250	14.8
SB-14	50	8/30/2013	CVOL	Toluene	ug/kg	6.2 UJ	0.62 J	--
SB-15	78	9/10/2013	CVOL	2-Butanone (MEK)	µg/kg	10 J	11	9.5
	78	9/10/2013	CVOL	Acetone	µg/kg	110	110	0.0
SB-17	40	9/12/2013	CVOL	2-Butanone (MEK)	µg/kg	21	20	4.9
	40	9/12/2013	CVOL	Acetone	µg/kg	200	200	0.0
SB-18	70	9/5/2013	CVOL	2-Butanone (MEK)	µg/kg	9.4 J	11	11.2
	70	9/5/2013	CVOL	Acetone	µg/kg	76	85	11.2

NOTES:

U Analyte was not detected and associated result is the quantitation limit.
J The reported result for this analyte should be considered an estimated value.
µg/kg Micrograms per kilograms
CVOL SOM01.2_CVOL

TABLE E-4a

Summary of Field Duplicate Results, Soil

Frontier Fertilizer Superfund Site, Davis, California

Well ID	Sample Date	Method	Analyte	Field Blank Result (µg/L)		Normal Sample Result (µg/L)	
BB-1	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	0.12	J
BB-2	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	0.067	J
BB-3	**8/23/2013**	TVOL	Chloroform	0.15	J	0.14	J
			Toluene	0.067	J	0.5	U
CC-1	**8/22/2013**	TVOL	Chloroform	0.13	J	0.22	J
CC-6	**8/22/2013**	TVOL	Chloroform	0.13	J	0.5	U
EE-2	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	1	
EE-3	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	0.22	J
EE-4	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	0.7	
EE-5	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	0.5	U
FF-1	**8/23/2013**	TVOL	Chloroform	0.15	J	0.5	U
			Toluene	0.067	J	0.14	J
FF-2	**8/22/2013**	TVOL	Chloroform	0.13	J	0.5	U
FF-3	**8/22/2013**	TVOL	Chloroform	0.13	J	0.5	U
GG-1	**9/13/2013**	TVOL	Chloroform	0.86		0.23	J
GG-4	**9/13/2013**	TVOL	Chloroform	0.86		0.5	U

NOTES:

J The reported result for this analyte should be considered an estimated value.

U Analyte was not detected and associated result is the quantitation limit.

µg/L Micrograms per liter

TVOL Method TVOL (Trace Volatiles)

TABLE E-4b

Summary of Equipment Blank Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Well ID	Sample Date	Method	Analyte	Result (µg/L)
FF-3	**8/21/2013**	TVOL	Chloroform	0.83

NOTES:

µg/L Micrograms per liter

TVOL Method TVOL (Trace Volatiles)

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
AA1-A654	Primary Sample	OH22002-001	TVOL	Vinyl Chloride-d3	105	65	-	131	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	Chloroethane-d5	74	71	-	131	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	1,1-Dichloroethene-d2	81	55	-	104	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	2-Butanone-d5	69	49	-	155	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	Chloroform-d	89	78	-	121	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	1,2-Dichloroethane-d4	82	78	-	129	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	Benzene-d6	110	77	-	124	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	1,2-Dichloropropane-d6	96	79	-	124	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	Toluene-d8	100	77	-	121	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	trans-1,3-Dichloropropene-d4	73	73	-	121	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	2-Hexanone-d5	82	28	-	135	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	1,1,2,2-Tetrachloroethane-d2	77	73	-	125	%Rec
AA1-A654	Primary Sample	OH22002-001	TVOL	1,2-Dichlorobenzene-d4	87	80	-	131	%Rec
AA1-A654	Primary Sample	1308034-01	5242SIM	4-Bromofluorobebzene	114	70	-	130	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	Vinyl Chloride-d3	89	65	-	131	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	Chloroethane-d5	143	71	-	131	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	1,1-Dichloroethene-d2	47	55	-	104	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	2-Butanone-d5	73	49	-	155	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	Chloroform-d	102	78	-	121	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	1,2-Dichloroethane-d4	89	78	-	129	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	Benzene-d6	119	77	-	124	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	1,2-Dichloropropane-d6	108	79	-	124	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	Toluene-d8	106	77	-	121	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	trans-1,3-Dichloropropene-d4	47	73	-	121	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	2-Hexanone-d5	125	28	-	135	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	1,1,2,2-Tetrachloroethane-d2	91	73	-	125	%Rec
BB1-A654	Primary Sample	OH22002-013	TVOL	1,2-Dichlorobenzene-d4	88	80	-	131	%Rec
BB1-A654	Primary Sample	1308045-08	5242SIM	4-Bromofluorobebzene	86	70	-	130	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	Vinyl Chloride-d3	92	65	-	131	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	Chloroethane-d5	140	71	-	131	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	1,1-Dichloroethene-d2	49	55	-	104	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	2-Butanone-d5	65	49	-	155	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	Chloroform-d	100	78	-	121	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	1,2-Dichloroethane-d4	86	78	-	129	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	Benzene-d6	118	77	-	124	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	1,2-Dichloropropane-d6	105	79	-	124	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	Toluene-d8	105	77	-	121	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	trans-1,3-Dichloropropene-d4	53	73	-	121	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	2-Hexanone-d5	119	28	-	135	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec
BB1-B654	Primary Sample	OH22002-014	TVOL	1,2-Dichlorobenzene-d4	84	80	-	131	%Rec
BB1-B654	Primary Sample	1308045-09	5242SIM	4-Bromofluorobebzene	104	70	-	130	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Vinyl Chloride-d3	112	65	-	131	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Chloroethane-d5	123	71	-	131	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,1-Dichloroethene-d2	96	55	-	104	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	2-Butanone-d5	94	49	-	155	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Chloroform-d	112	78	-	121	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,2-Dichloroethane-d4	106	78	-	129	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Benzene-d6	131	77	-	124	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,2-Dichloropropane-d6	117	79	-	124	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Toluene-d8	117	77	-	121	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	trans-1,3-Dichloropropene-d4	75	73	-	121	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	2-Hexanone-d5	98	28	-	135	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,1,2,2-Tetrachloroethane-d2	108	73	-	125	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,2-Dichlorobenzene-d4	104	80	-	131	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Vinyl Chloride-d3	115	65	-	131	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Chloroethane-d5	141	71	-	131	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,1-Dichloroethene-d2	86	55	-	104	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
BB2-A654	Primary Sample	OH22002-015	TVOL	2-Butanone-d5	88	49	-	155	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Chloroform-d	99	78	-	121	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,2-Dichloroethane-d4	99	78	-	129	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Benzene-d6	118	77	-	124	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,2-Dichloropropane-d6	106	79	-	124	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	Toluene-d8	111	77	-	121	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	trans-1,3-Dichloropropene-d4	79	73	-	121	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	2-Hexanone-d5	76	28	-	135	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,1,2,2-Tetrachloroethane-d2	86	73	-	125	%Rec
BB2-A654	Primary Sample	OH22002-015	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
BB2-A654	Primary Sample	1308045-10	5242SIM	4-Bromofluorobebzene	99	70	-	130	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	Vinyl Chloride-d3	113	65	-	131	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	Chloroethane-d5	142	71	-	131	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	1,1-Dichloroethene-d2	78	55	-	104	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	2-Butanone-d5	99	49	-	155	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	Chloroform-d	104	78	-	121	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	1,2-Dichloroethane-d4	104	78	-	129	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	Benzene-d6	111	77	-	124	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	1,2-Dichloropropane-d6	101	79	-	124	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	Toluene-d8	102	77	-	121	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	trans-1,3-Dichloropropene-d4	79	73	-	121	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	2-Hexanone-d5	87	28	-	135	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	1,1,2,2-Tetrachloroethane-d2	89	73	-	125	%Rec
BB3-A654	Primary Sample	OH22002-016	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
BB3-A654	Primary Sample	1308045-11	5242SIM	4-Bromofluorobebzene	99	70	-	130	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	Vinyl Chloride-d3	116	65	-	131	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	Chloroethane-d5	149	71	-	131	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	1,1-Dichloroethene-d2	91	55	-	104	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	2-Butanone-d5	106	49	-	155	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	Chloroform-d	107	78	-	121	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	1,2-Dichloroethane-d4	106	78	-	129	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	Benzene-d6	118	77	-	124	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	1,2-Dichloropropane-d6	105	79	-	124	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	Toluene-d8	108	77	-	121	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	trans-1,3-Dichloropropene-d4	82	73	-	121	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	2-Hexanone-d5	92	28	-	135	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	1,1,2,2-Tetrachloroethane-d2	97	73	-	125	%Rec
CC1-A654	Primary Sample	OH22002-017	TVOL	1,2-Dichlorobenzene-d4	100	80	-	131	%Rec
CC1-A654	Primary Sample	1308045-01	5242SIM	4-Bromofluorobebzene	96	70	-	130	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	Vinyl Chloride-d3	112	65	-	131	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	Chloroethane-d5	87	71	-	131	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	1,1-Dichloroethene-d2	81	55	-	104	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	2-Butanone-d5	65	49	-	155	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	Chloroform-d	95	78	-	121	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	1,2-Dichloroethane-d4	87	78	-	129	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	Benzene-d6	112	77	-	124	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	1,2-Dichloropropane-d6	97	79	-	124	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	Toluene-d8	101	77	-	121	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	trans-1,3-Dichloropropene-d4	61	73	-	121	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	2-Hexanone-d5	78	28	-	135	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	1,1,2,2-Tetrachloroethane-d2	78	73	-	125	%Rec
CC2-A654	Primary Sample	OH22002-002	TVOL	1,2-Dichlorobenzene-d4	87	80	-	131	%Rec
CC2-A654	Primary Sample	1308034-02	5242SIM	4-Bromofluorobebzene	95	70	-	130	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Vinyl Chloride-d3	111	65	-	131	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Chloroethane-d5	161	71	-	131	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,1-Dichloroethene-d2	100	55	-	104	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	2-Butanone-d5	99	49	-	155	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Chloroform-d	109	78	-	121	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
CC3-A654	Primary Sample	OH22002-003	TVOL	1,2-Dichloroethane-d4	102	78	-	129	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Benzene-d6	117	77	-	124	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,2-Dichloropropane-d6	108	79	-	124	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Toluene-d8	111	77	-	121	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	trans-1,3-Dichloropropene-d4	69	73	-	121	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	2-Hexanone-d5	99	28	-	135	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,1,2,2-Tetrachloroethane-d2	99	73	-	125	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,2-Dichlorobenzene-d4	100	80	-	131	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Vinyl Chloride-d3	117	65	-	131	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Chloroethane-d5	123	71	-	131	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,1-Dichloroethene-d2	89	55	-	104	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	2-Butanone-d5	83	49	-	155	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Chloroform-d	96	78	-	121	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,2-Dichloroethane-d4	90	78	-	129	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Benzene-d6	116	77	-	124	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,2-Dichloropropane-d6	101	79	-	124	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	Toluene-d8	108	77	-	121	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	trans-1,3-Dichloropropene-d4	75	73	-	121	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	2-Hexanone-d5	79	28	-	135	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,1,2,2-Tetrachloroethane-d2	85	73	-	125	%Rec
CC3-A654	Primary Sample	OH22002-003	TVOL	1,2-Dichlorobenzene-d4	95	80	-	131	%Rec
CC3-A654	Primary Sample	1308034-03	5242SIM	4-Bromofluorobebzene	92	70	-	130	%Rec
CC3-A654	Primary Sample	1308034-03RE1	5242SIM	4-Bromofluorobebzene	88	70	-	130	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	Vinyl Chloride-d3	108	65	-	131	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	Chloroethane-d5	122	71	-	131	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	1,1-Dichloroethene-d2	83	55	-	104	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	2-Butanone-d5	77	49	-	155	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	Chloroform-d	97	78	-	121	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	1,2-Dichloroethane-d4	92	78	-	129	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	Benzene-d6	113	77	-	124	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	1,2-Dichloropropane-d6	97	79	-	124	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	Toluene-d8	102	77	-	121	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	trans-1,3-Dichloropropene-d4	67	73	-	121	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	2-Hexanone-d5	82	28	-	135	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	1,1,2,2-Tetrachloroethane-d2	78	73	-	125	%Rec
CC4-A654	Primary Sample	OH22002-004	TVOL	1,2-Dichlorobenzene-d4	88	80	-	131	%Rec
CC4-A654	Primary Sample	1308034-04	5242SIM	4-Bromofluorobebzene	93	70	-	130	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	Vinyl Chloride-d3	119	65	-	131	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	Chloroethane-d5	88	71	-	131	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	1,1-Dichloroethene-d2	89	55	-	104	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	2-Butanone-d5	78	49	-	155	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	Chloroform-d	103	78	-	121	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	1,2-Dichloroethane-d4	98	78	-	129	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	Benzene-d6	122	77	-	124	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	1,2-Dichloropropane-d6	106	79	-	124	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	Toluene-d8	110	77	-	121	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	trans-1,3-Dichloropropene-d4	74	73	-	121	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	2-Hexanone-d5	90	28	-	135	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	1,1,2,2-Tetrachloroethane-d2	92	73	-	125	%Rec
CC5-A654	Primary Sample	OH22002-005	TVOL	1,2-Dichlorobenzene-d4	97	80	-	131	%Rec
CC5-A654	Primary Sample	1308034-05	5242SIM	4-Bromofluorobebzene	89	70	-	130	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	Vinyl Chloride-d3	114	65	-	131	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	Chloroethane-d5	124	71	-	131	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	1,1-Dichloroethene-d2	87	55	-	104	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	2-Butanone-d5	99	49	-	155	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	Chloroform-d	101	78	-	121	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	1,2-Dichloroethane-d4	100	78	-	129	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	Benzene-d6	107	77	-	124	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
CC6-A654	Primary Sample	OH22002-018	TVOL	1,2-Dichloropropane-d6	97	79	-	124	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	Toluene-d8	104	77	-	121	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	trans-1,3-Dichloropropene-d4	80	73	-	121	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	2-Hexanone-d5	86	28	-	135	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	1,1,2,2-Tetrachloroethane-d2	89	73	-	125	%Rec
CC6-A654	Primary Sample	OH22002-018	TVOL	1,2-Dichlorobenzene-d4	98	80	-	131	%Rec
CC6-A654	Primary Sample	1308045-02	5242SIM	4-Bromofluorobebzene	91	70	-	130	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	Vinyl Chloride-d3	118	65	-	131	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	Chloroethane-d5	84	71	-	131	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	1,1-Dichloroethene-d2	90	55	-	104	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	2-Butanone-d5	101	49	-	155	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	Chloroform-d	101	78	-	121	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	1,2-Dichloroethane-d4	102	78	-	129	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	Benzene-d6	113	77	-	124	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	1,2-Dichloropropane-d6	101	79	-	124	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	Toluene-d8	106	77	-	121	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	trans-1,3-Dichloropropene-d4	80	73	-	121	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	2-Hexanone-d5	86	28	-	135	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec
CC6-D654	Primary Sample	OH22002-019	TVOL	1,2-Dichlorobenzene-d4	99	80	-	131	%Rec
CC6-D654	Primary Sample	1308045-03	5242SIM	4-Bromofluorobebzene	82	70	-	130	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	Vinyl Chloride-d3	111	65	-	131	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	Chloroethane-d5	101	71	-	131	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	1,1-Dichloroethene-d2	83	55	-	104	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	2-Butanone-d5	77	49	-	155	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	Chloroform-d	101	78	-	121	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	1,2-Dichloroethane-d4	97	78	-	129	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	Benzene-d6	112	77	-	124	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	1,2-Dichloropropane-d6	103	79	-	124	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	Toluene-d8	105	77	-	121	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	trans-1,3-Dichloropropene-d4	76	73	-	121	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	2-Hexanone-d5	88	28	-	135	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	1,1,2,2-Tetrachloroethane-d2	89	73	-	125	%Rec
DD1-A654	Primary Sample	OH22002-006	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
DD1-A654	Primary Sample	1308034-06	5242SIM	4-Bromofluorobebzene	75	70	-	130	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	Vinyl Chloride-d3	111	65	-	131	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	Chloroethane-d5	93	71	-	131	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	1,1-Dichloroethene-d2	75	55	-	104	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	2-Butanone-d5	77	49	-	155	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	Chloroform-d	95	78	-	121	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	1,2-Dichloroethane-d4	92	78	-	129	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	Benzene-d6	109	77	-	124	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	1,2-Dichloropropane-d6	97	79	-	124	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	Toluene-d8	98	77	-	121	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	trans-1,3-Dichloropropene-d4	73	73	-	121	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	2-Hexanone-d5	82	28	-	135	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	1,1,2,2-Tetrachloroethane-d2	85	73	-	125	%Rec
DD1-B654	Primary Sample	OH22002-007	TVOL	1,2-Dichlorobenzene-d4	93	80	-	131	%Rec
DD1-B654	Primary Sample	1308034-07	5242SIM	4-Bromofluorobebzene	77	70	-	130	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	Vinyl Chloride-d3	114	65	-	131	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	Chloroethane-d5	135	71	-	131	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	1,1-Dichloroethene-d2	86	55	-	104	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	2-Butanone-d5	82	49	-	155	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	Chloroform-d	100	78	-	121	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	1,2-Dichloroethane-d4	98	78	-	129	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	Benzene-d6	114	77	-	124	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	1,2-Dichloropropane-d6	102	79	-	124	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	Toluene-d8	106	77	-	121	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
DD2-A654	Primary Sample	OH22002-008	TVOL	trans-1,3-Dichloropropene-d4	77	73	-	121	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	2-Hexanone-d5	88	28	-	135	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec
DD2-A654	Primary Sample	OH22002-008	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
DD2-A654	Primary Sample	1308034-08	5242SIM	4-Bromofluorobebzene	87	70	-	130	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	Vinyl Chloride-d3	107	65	-	131	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	Chloroethane-d5	138	71	-	131	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	1,1-Dichloroethene-d2	85	55	-	104	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	2-Butanone-d5	90	49	-	155	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	Chloroform-d	97	78	-	121	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	1,2-Dichloroethane-d4	95	78	-	129	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	Benzene-d6	109	77	-	124	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	1,2-Dichloropropane-d6	96	79	-	124	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	Toluene-d8	100	77	-	121	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	trans-1,3-Dichloropropene-d4	76	73	-	121	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	2-Hexanone-d5	80	28	-	135	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	1,1,2,2-Tetrachloroethane-d2	83	73	-	125	%Rec
DD3-A654	Primary Sample	OH22002-009	TVOL	1,2-Dichlorobenzene-d4	92	80	-	131	%Rec
DD3-A654	Primary Sample	1308034-09	5242SIM	4-Bromofluorobebzene	85	70	-	130	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Vinyl Chloride-d3	118	65	-	131	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Chloroethane-d5	0	71	-	131	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,1-Dichloroethene-d2	104	55	-	104	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	2-Butanone-d5	85	49	-	155	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Chloroform-d	111	78	-	121	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,2-Dichloroethane-d4	101	78	-	129	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Benzene-d6	120	77	-	124	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,2-Dichloropropane-d6	107	79	-	124	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Toluene-d8	112	77	-	121	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	trans-1,3-Dichloropropene-d4	71	73	-	121	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	2-Hexanone-d5	127	28	-	135	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,1,2,2-Tetrachloroethane-d2	100	73	-	125	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,2-Dichlorobenzene-d4	99	80	-	131	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Vinyl Chloride-d3	112	65	-	131	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Chloroethane-d5	150	71	-	131	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,1-Dichloroethene-d2	88	55	-	104	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	2-Butanone-d5	90	49	-	155	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Chloroform-d	101	78	-	121	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,2-Dichloroethane-d4	101	78	-	129	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Benzene-d6	118	77	-	124	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,2-Dichloropropane-d6	103	79	-	124	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	Toluene-d8	111	77	-	121	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	trans-1,3-Dichloropropene-d4	85	73	-	121	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	2-Hexanone-d5	82	28	-	135	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec
DD4-A654	Primary Sample	OH22002-010	TVOL	1,2-Dichlorobenzene-d4	98	80	-	131	%Rec
DD4-A654	Primary Sample	1308034-10	5242SIM	4-Bromofluorobebzene	88	70	-	130	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	Vinyl Chloride-d3	119	65	-	131	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	Chloroethane-d5	140	71	-	131	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	1,1-Dichloroethene-d2	96	55	-	104	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	2-Butanone-d5	83	49	-	155	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	Chloroform-d	114	78	-	121	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	1,2-Dichloroethane-d4	105	78	-	129	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	Benzene-d6	136	77	-	124	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	1,2-Dichloropropane-d6	121	79	-	124	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	Toluene-d8	117	77	-	121	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	trans-1,3-Dichloropropene-d4	83	73	-	121	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	2-Hexanone-d5	75	28	-	135	%Rec
DD5-A654	Primary Sample	OI14006-001	TVOL	1,1,2,2-Tetrachloroethane-d2	101	73	-	125	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
DD5-A654	Primary Sample	OI14006-001	TVOL	1,2-Dichlorobenzene-d4	104	80	-	131	%Rec
DD5-A654	Primary Sample	1309053-01	5242SIM	4-Bromofluorobebzene	96	70	-	130	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	Vinyl Chloride-d3	88	65	-	131	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	Chloroethane-d5	109	71	-	131	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	1,1-Dichloroethene-d2	71	55	-	104	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	2-Butanone-d5	71	49	-	155	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	Chloroform-d	89	78	-	121	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	1,2-Dichloroethane-d4	90	78	-	129	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	Benzene-d6	91	77	-	124	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	1,2-Dichloropropane-d6	86	79	-	124	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	Toluene-d8	92	77	-	121	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	trans-1,3-Dichloropropene-d4	83	73	-	121	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	2-Hexanone-d5	69	28	-	135	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	1,1,2,2-Tetrachloroethane-d2	76	73	-	125	%Rec
DD6-A654	Primary Sample	OI14006-002	TVOL	1,2-Dichlorobenzene-d4	88	80	-	131	%Rec
DD6-A654	Primary Sample	1309053-02	5242SIM	4-Bromofluorobebzene	91	70	-	130	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Vinyl Chloride-d3	109	65	-	131	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Chloroethane-d5	82	71	-	131	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,1-Dichloroethene-d2	76	55	-	104	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	2-Butanone-d5	67	49	-	155	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Chloroform-d	87	78	-	121	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,2-Dichloroethane-d4	79	78	-	129	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Benzene-d6	104	77	-	124	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,2-Dichloropropane-d6	94	79	-	124	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Toluene-d8	92	77	-	121	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	trans-1,3-Dichloropropene-d4	67	73	-	121	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	2-Hexanone-d5	92	28	-	135	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,1,2,2-Tetrachloroethane-d2	82	73	-	125	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,2-Dichlorobenzene-d4	78	80	-	131	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Vinyl Chloride-d3	134	65	-	131	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Chloroethane-d5	160	71	-	131	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,1-Dichloroethene-d2	105	55	-	104	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	2-Butanone-d5	65	49	-	155	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Chloroform-d	105	78	-	121	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,2-Dichloroethane-d4	95	78	-	129	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Benzene-d6	123	77	-	124	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,2-Dichloropropane-d6	108	79	-	124	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	Toluene-d8	114	77	-	121	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	trans-1,3-Dichloropropene-d4	86	73	-	121	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	2-Hexanone-d5	114	28	-	135	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,1,2,2-Tetrachloroethane-d2	95	73	-	125	%Rec
EE2-A654	Primary Sample	OH22002-020	TVOL	1,2-Dichlorobenzene-d4	97	80	-	131	%Rec
EE2-A654	Primary Sample	1308045-12	5242SIM	4-Bromofluorobebzene	96	70	-	130	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	Vinyl Chloride-d3	119	65	-	131	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	Chloroethane-d5	88	71	-	131	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	1,1-Dichloroethene-d2	93	55	-	104	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	2-Butanone-d5	78	49	-	155	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	Chloroform-d	110	78	-	121	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	1,2-Dichloroethane-d4	101	78	-	129	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	Benzene-d6	137	77	-	124	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	1,2-Dichloropropane-d6	119	79	-	124	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	Toluene-d8	119	77	-	121	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	trans-1,3-Dichloropropene-d4	81	73	-	121	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	2-Hexanone-d5	107	28	-	135	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	1,1,2,2-Tetrachloroethane-d2	106	73	-	125	%Rec
EE3-A654	Primary Sample	OH22002-021	TVOL	1,2-Dichlorobenzene-d4	101	80	-	131	%Rec
EE3-A654	Primary Sample	1308045-13	5242SIM	4-Bromofluorobebzene	64	70	-	130	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Vinyl Chloride-d3	158	65	-	131	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
EE4-A654	Primary Sample	OH24009-001	TVOL	Chloroethane-d5	177	71	-	131	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,1-Dichloroethene-d2	111	55	-	104	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	2-Butanone-d5	66	49	-	155	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Chloroform-d	109	78	-	121	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,2-Dichloroethane-d4	93	78	-	129	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Benzene-d6	128	77	-	124	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,2-Dichloropropane-d6	106	79	-	124	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Toluene-d8	116	77	-	121	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	trans-1,3-Dichloropropene-d4	85	73	-	121	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	2-Hexanone-d5	125	28	-	135	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,1,2,2-Tetrachloroethane-d2	99	73	-	125	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Vinyl Chloride-d3	144	65	-	131	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Chloroethane-d5	175	71	-	131	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,1-Dichloroethene-d2	106	55	-	104	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	2-Butanone-d5	76	49	-	155	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Chloroform-d	108	78	-	121	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,2-Dichloroethane-d4	101	78	-	129	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Benzene-d6	121	77	-	124	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,2-Dichloropropane-d6	106	79	-	124	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	Toluene-d8	112	77	-	121	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	trans-1,3-Dichloropropene-d4	86	73	-	121	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	2-Hexanone-d5	127	28	-	135	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,1,2,2-Tetrachloroethane-d2	102	73	-	125	%Rec
EE4-A654	Primary Sample	OH24009-001	TVOL	1,2-Dichlorobenzene-d4	92	80	-	131	%Rec
EE4-A654	Primary Sample	1308045-14	5242SIM	4-Bromofluorobebzene	79	70	-	130	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	Vinyl Chloride-d3	133	65	-	131	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	Chloroethane-d5	178	71	-	131	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	1,1-Dichloroethene-d2	97	55	-	104	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	2-Butanone-d5	54	49	-	155	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	Chloroform-d	105	78	-	121	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	1,2-Dichloroethane-d4	90	78	-	129	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	Benzene-d6	117	77	-	124	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	1,2-Dichloropropane-d6	103	79	-	124	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	Toluene-d8	105	77	-	121	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	trans-1,3-Dichloropropene-d4	85	73	-	121	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	2-Hexanone-d5	105	28	-	135	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	1,1,2,2-Tetrachloroethane-d2	86	73	-	125	%Rec
EE5-A654	Primary Sample	OH24009-002	TVOL	1,2-Dichlorobenzene-d4	87	80	-	131	%Rec
EE5-A654	Primary Sample	1308045-04	5242SIM	4-Bromofluorobebzene	95	70	-	130	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	Vinyl Chloride-d3	112	65	-	131	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	Chloroethane-d5	147	71	-	131	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	1,1-Dichloroethene-d2	87	55	-	104	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	2-Butanone-d5	92	49	-	155	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	Chloroform-d	100	78	-	121	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	1,2-Dichloroethane-d4	98	78	-	129	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	Benzene-d6	115	77	-	124	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	1,2-Dichloropropane-d6	105	79	-	124	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	Toluene-d8	111	77	-	121	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	trans-1,3-Dichloropropene-d4	86	73	-	121	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	2-Hexanone-d5	86	28	-	135	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec
EE5-D654	Primary Sample	OH24009-003	TVOL	1,2-Dichlorobenzene-d4	103	80	-	131	%Rec
EE5-D654	Primary Sample	1308045-05	5242SIM	4-Bromofluorobebzene	83	70	-	130	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	Vinyl Chloride-d3	106	65	-	131	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	Chloroethane-d5	140	71	-	131	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	1,1-Dichloroethene-d2	83	55	-	104	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	2-Butanone-d5	91	49	-	155	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
FF1-A654	Primary Sample	OH24009-004	TVOL	Chloroform-d	95	78	-	121	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	1,2-Dichloroethane-d4	95	78	-	129	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	Benzene-d6	104	77	-	124	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	1,2-Dichloropropane-d6	98	79	-	124	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	Toluene-d8	107	77	-	121	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	trans-1,3-Dichloropropene-d4	88	73	-	121	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	2-Hexanone-d5	83	28	-	135	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	1,1,2,2-Tetrachloroethane-d2	81	73	-	125	%Rec
FF1-A654	Primary Sample	OH24009-004	TVOL	1,2-Dichlorobenzene-d4	98	80	-	131	%Rec
FF1-A654	Primary Sample	1308045-15	5242SIM	4-Bromofluorobebzene	98	70	-	130	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	Vinyl Chloride-d3	110	65	-	131	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	Chloroethane-d5	141	71	-	131	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	1,1-Dichloroethene-d2	82	55	-	104	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	2-Butanone-d5	93	49	-	155	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	Chloroform-d	95	78	-	121	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	1,2-Dichloroethane-d4	98	78	-	129	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	Benzene-d6	100	77	-	124	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	1,2-Dichloropropane-d6	95	79	-	124	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	Toluene-d8	105	77	-	121	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	trans-1,3-Dichloropropene-d4	88	73	-	121	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	2-Hexanone-d5	84	28	-	135	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	1,1,2,2-Tetrachloroethane-d2	85	73	-	125	%Rec
FF1-B654	Primary Sample	OH24009-005	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
FF1-B654	Primary Sample	1308045-16	5242SIM	4-Bromofluorobebzene	96	70	-	130	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Vinyl Chloride-d3	150	65	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Chloroethane-d5	142	71	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,1-Dichloroethene-d2	108	55	-	104	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	2-Butanone-d5	84	49	-	155	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Chloroform-d	112	78	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichloroethane-d4	98	78	-	129	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Benzene-d6	140	77	-	124	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichloropropane-d6	123	79	-	124	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Toluene-d8	123	77	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	trans-1,3-Dichloropropene-d4	69	73	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	2-Hexanone-d5	115	28	-	135	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,1,2,2-Tetrachloroethane-d2	103	73	-	125	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichlorobenzene-d4	103	80	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Vinyl Chloride-d3	141	65	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Chloroethane-d5	163	71	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,1-Dichloroethene-d2	105	55	-	104	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	2-Butanone-d5	92	49	-	155	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Chloroform-d	108	78	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichloroethane-d4	100	78	-	129	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Benzene-d6	119	77	-	124	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichloropropane-d6	108	79	-	124	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Toluene-d8	108	77	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	trans-1,3-Dichloropropene-d4	85	73	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	2-Hexanone-d5	113	28	-	135	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,1,2,2-Tetrachloroethane-d2	102	73	-	125	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichlorobenzene-d4	93	80	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Vinyl Chloride-d3	147	65	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Chloroethane-d5	176	71	-	131	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,1-Dichloroethene-d2	106	55	-	104	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	2-Butanone-d5	88	49	-	155	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Chloroform-d	108	78	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichloroethane-d4	103	78	-	129	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	Benzene-d6	121	77	-	124	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichloropropane-d6	106	79	-	124	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
FF2-A654	Primary Sample	OH24009-006	TVOL	Toluene-d8	113	77	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	trans-1,3-Dichloropropene-d4	78	73	-	121	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	2-Hexanone-d5	88	28	-	135	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,1,2,2-Tetrachloroethane-d2	106	73	-	125	%Rec
FF2-A654	Primary Sample	OH24009-006	TVOL	1,2-Dichlorobenzene-d4	99	80	-	131	%Rec
FF2-A654	Primary Sample	1308045-06	5242SIM	4-Bromofluorobebzene	102	70	-	130	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Vinyl Chloride-d3	149	65	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Chloroethane-d5	154	71	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,1-Dichloroethene-d2	109	55	-	104	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	2-Butanone-d5	67	49	-	155	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Chloroform-d	109	78	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichloroethane-d4	91	78	-	129	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Benzene-d6	134	77	-	124	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichloropropane-d6	114	79	-	124	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Toluene-d8	118	77	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	trans-1,3-Dichloropropene-d4	59	73	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	2-Hexanone-d5	134	28	-	135	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,1,2,2-Tetrachloroethane-d2	108	73	-	125	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichlorobenzene-d4	101	80	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Vinyl Chloride-d3	123	65	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Chloroethane-d5	41	71	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,1-Dichloroethene-d2	89	55	-	104	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	2-Butanone-d5	91	49	-	155	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Chloroform-d	99	78	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichloroethane-d4	94	78	-	129	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Benzene-d6	117	77	-	124	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichloropropane-d6	102	79	-	124	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Toluene-d8	109	77	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	trans-1,3-Dichloropropene-d4	90	73	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	2-Hexanone-d5	87	28	-	135	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,1,2,2-Tetrachloroethane-d2	85	73	-	125	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichlorobenzene-d4	96	80	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Vinyl Chloride-d3	149	65	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Chloroethane-d5	180	71	-	131	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,1-Dichloroethene-d2	107	55	-	104	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	2-Butanone-d5	88	49	-	155	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Chloroform-d	107	78	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichloroethane-d4	97	78	-	129	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Benzene-d6	118	77	-	124	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichloropropane-d6	103	79	-	124	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	Toluene-d8	110	77	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	trans-1,3-Dichloropropene-d4	73	73	-	121	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	2-Hexanone-d5	94	28	-	135	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,1,2,2-Tetrachloroethane-d2	105	73	-	125	%Rec
FF3-A654	Primary Sample	OH24009-007	TVOL	1,2-Dichlorobenzene-d4	101	80	-	131	%Rec
FF3-A654	Primary Sample	1308045-07	5242SIM	4-Bromofluorobebzene	87	70	-	130	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	Vinyl Chloride-d3	122	65	-	131	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	Chloroethane-d5	144	71	-	131	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	1,1-Dichloroethene-d2	89	55	-	104	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	2-Butanone-d5	92	49	-	155	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	Chloroform-d	108	78	-	121	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	1,2-Dichloroethane-d4	106	78	-	129	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	Benzene-d6	111	77	-	124	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	1,2-Dichloropropane-d6	101	79	-	124	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	Toluene-d8	102	77	-	121	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	trans-1,3-Dichloropropene-d4	74	73	-	121	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	2-Hexanone-d5	86	28	-	135	%Rec
FF3-C654	Primary Sample	OH22002-011	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec

TABLE E-5a
Summary of Surrogate Results, Groundwater
Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
FF3-C654	Primary Sample	OH22002-011	TVOL	1,2-Dichlorobenzene-d4	97	80	-	131	%Rec
FF3-C654	Primary Sample	1308034-11	5242SIM	4-Bromofluorobebzene	90	70	-	130	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	Vinyl Chloride-d3	103	65	-	131	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	Chloroethane-d5	123	71	-	131	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	1,1-Dichloroethene-d2	80	55	-	104	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	2-Butanone-d5	84	49	-	155	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	Chloroform-d	100	78	-	121	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	1,2-Dichloroethane-d4	99	78	-	129	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	Benzene-d6	100	77	-	124	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	1,2-Dichloropropane-d6	96	79	-	124	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	Toluene-d8	98	77	-	121	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	trans-1,3-Dichloropropene-d4	88	73	-	121	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	2-Hexanone-d5	76	28	-	135	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	1,1,2,2-Tetrachloroethane-d2	87	73	-	125	%Rec
GG1-A654	Primary Sample	OI14006-003	TVOL	1,2-Dichlorobenzene-d4	93	80	-	131	%Rec
GG1-A654	Primary Sample	1309053-04	5242SIM	4-Bromofluorobebzene	102	70	-	130	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Vinyl Chloride-d3	107	65	-	131	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Chloroethane-d5	116	71	-	131	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,1-Dichloroethene-d2	90	55	-	104	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	2-Butanone-d5	88	49	-	155	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Chloroform-d	123	78	-	121	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,2-Dichloroethane-d4	99	78	-	129	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Benzene-d6	117	77	-	124	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,2-Dichloropropane-d6	108	79	-	124	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Toluene-d8	109	77	-	121	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	trans-1,3-Dichloropropene-d4	84	73	-	121	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	2-Hexanone-d5	90	28	-	135	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,1,2,2-Tetrachloroethane-d2	92	73	-	125	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,2-Dichlorobenzene-d4	108	80	-	131	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Vinyl Chloride-d3	105	65	-	131	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Chloroethane-d5	108	71	-	131	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,1-Dichloroethene-d2	79	55	-	104	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	2-Butanone-d5	91	49	-	155	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Chloroform-d	92	78	-	121	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,2-Dichloroethane-d4	95	78	-	129	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Benzene-d6	91	77	-	124	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,2-Dichloropropane-d6	88	79	-	124	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	Toluene-d8	88	77	-	121	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	trans-1,3-Dichloropropene-d4	85	73	-	121	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	2-Hexanone-d5	87	28	-	135	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,1,2,2-Tetrachloroethane-d2	83	73	-	125	%Rec
GG2-A654	Primary Sample	OI14006-004	TVOL	1,2-Dichlorobenzene-d4	92	80	-	131	%Rec
GG2-A654	Primary Sample	1309053-03	5242SIM	4-Bromofluorobebzene	107	70	-	130	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	Vinyl Chloride-d3	102	65	-	131	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	Chloroethane-d5	113	71	-	131	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	1,1-Dichloroethene-d2	80	55	-	104	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	2-Butanone-d5	91	49	-	155	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	Chloroform-d	103	78	-	121	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	1,2-Dichloroethane-d4	105	78	-	129	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	Benzene-d6	98	77	-	124	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	1,2-Dichloropropane-d6	96	79	-	124	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	Toluene-d8	101	77	-	121	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	trans-1,3-Dichloropropene-d4	95	73	-	121	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	2-Hexanone-d5	85	28	-	135	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	1,1,2,2-Tetrachloroethane-d2	91	73	-	125	%Rec
GG4-A654	Primary Sample	OI14006-005	TVOL	1,2-Dichlorobenzene-d4	97	80	-	131	%Rec
GG4-A654	Primary Sample	1309053-05RE1	5242SIM	4-Bromofluorobebzene	93	70	-	130	%Rec
GG4-A654	LR	1309053-05RE2	5242SIM	4-Bromofluorobebzene	98	70	-	130	%Rec

TABLE E-5a

Summary of Surrogate Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria			Units
GG4-D654	Primary Sample	OI14006-006	TVOL	Vinyl Chloride-d3	101	65	-	131	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	Chloroethane-d5	122	71	-	131	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	1,1-Dichloroethene-d2	83	55	-	104	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	2-Butanone-d5	90	49	-	155	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	Chloroform-d	104	78	-	121	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	1,2-Dichloroethane-d4	107	78	-	129	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	Benzene-d6	103	77	-	124	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	1,2-Dichloropropane-d6	100	79	-	124	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	Toluene-d8	103	77	-	121	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	trans-1,3-Dichloropropene-d4	95	73	-	121	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	2-Hexanone-d5	83	28	-	135	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	1,1,2,2-Tetrachloroethane-d2	90	73	-	125	%Rec
GG4-D654	Primary Sample	OI14006-006	TVOL	1,2-Dichlorobenzene-d4	99	80	-	131	%Rec
GG4-D654	Primary Sample	1309053-06	5242SIM	4-Bromofluorobebzene	94	70	-	130	%Rec

Notes:

%Rec Percent Recovery

TABLE E-5b

Summary of Surrogate Results, Soil

Frontier Fertilizer Superfund Site, Davis, California

Sample ID	QAQC Type	Lab SampleID	Analysis Method	Analyte	Result	Acceptance Criteria	Units

No Surrogate data provided by lab

TABLE E-6a

Summary of Lab Control Standard Results, Groundwater

Frontier Fertilizer Superfund Site, Davis, California

FieldID	Sample Type	LAB_SAMPLE_ID	Analysis Method	Analyte	Result	Units	Recovery	Acceptance Criteria			Units
B13H104-BS1	Lab Control Sample	B13H104-BS1	5242SIM	1,2,3-Trichloropropane (TCP)	0.045	µg/L	90	78	-	117	%Rec
B13H104-BS1	Lab Control Sample	B13H104-BS1	5242SIM	1,2-Dibromo-3-Chloropropane (DBCP)	0.109	µg/L	109	43	-	140	%Rec
B13H104-BS1	Lab Control Sample	B13H104-BS1	5242SIM	1,2-Dibromoethane (EDB)	0.05	µg/L	99	68	-	125	%Rec
B13H114-BS1	Lab Control Sample	B13H114-BS1	5242SIM	1,2,3-Trichloropropane (TCP)	0.047	µg/L	93	78	-	117	%Rec
B13H114-BS1	Lab Control Sample	B13H114-BS1	5242SIM	1,2-Dibromo-3-Chloropropane (DBCP)	0.127	µg/L	127	43	-	140	%Rec
B13H114-BS1	Lab Control Sample	B13H114-BS1	5242SIM	1,2-Dibromoethane (EDB)	0.052	µg/L	103	68	-	125	%Rec
B13H114-BS1	Lab Control Sample	B13H114-BS1	5242SIM	1,2,3-Trichloropropane (TCP)	0.047	µg/L	93	78		117	%Rec
B13H114-BS1	Lab Control Sample	B13H114-BS1	5242SIM	1,2-Dibromo-3-Chloropropane (DBCP)	0.127	µg/L	127	43		140	%Rec
B13H114-BS1	Lab Control Sample	B13H114-BS1	5242SIM	1,2-Dibromoethane (EDB)	0.052	µg/L	103	68		125	%Rec
B13H122-BS1	Lab Control Sample	B13H122-BS1	5242SIM	1,2,3-Trichloropropane (TCP)	0.055	µg/L	110	78		117	%Rec
B13H122-BS1	Lab Control Sample	B13H122-BS1	5242SIM	1,2-Dibromo-3-Chloropropane (DBCP)	0.093	µg/L	93	43		140	%Rec
B13H122-BS1	Lab Control Sample	B13H122-BS1	5242SIM	1,2-Dibromoethane (EDB)	0.049	µg/L	98	68		125	%Rec
B13I092-BS1	Lab Control Sample	B13I092-BS1	5242SIM	1,2,3-Trichloropropane (TCP)	0.052	µg/L	103	78		117	%Rec
B13I092-BS1	Lab Control Sample	B13I092-BS1	5242SIM	1,2-Dibromo-3-Chloropropane (DBCP)	0.084	µg/L	84	43		140	%Rec
B13I092-BS1	Lab Control Sample	B13I092-BS1	5242SIM	1,2-Dibromoethane (EDB)	0.051	µg/L	101	68		125	%Rec
B13I103-BS1	Lab Control Sample	B13I103-BS1	5242SIM	1,2,3-Trichloropropane (TCP)	0.053	µg/L	105	78		117	%Rec
B13I103-BS1	Lab Control Sample	B13I103-BS1	5242SIM	1,2-Dibromo-3-Chloropropane (DBCP)	0.086	µg/L	86	43		140	%Rec
B13I103-BS1	Lab Control Sample	B13I103-BS1	5242SIM	1,2-Dibromoethane (EDB)	0.05	µg/L	100	68		125	%Rec

Notes:

%Rec Percent Recovery

µg/L Micrograms per liter

TABLE E-6b

Summary of Lab Control Standard Results, Soil

Frontier Fertilizer Superfund Site, Davis, California

FieldID	Sample Type	LAB_SAMPLE_ID	Analysis Method	Analyte	Result	Units	Recovery	Acceptance Criteria			Units
B13I038-BS1	Lab Control Sample	B13I038-BS1	SW6010B	Arsenic	21.2	mg/L	106	80	-	120	%Rec
B13I038-BS1	Lab Control Sample	B13I038-BS1	SW6010B	Barium	17.9	mg/L	89	80	-	120	%Rec
B13I038-BS1	Lab Control Sample	B13I038-BS1	SW6010B	Cadmium	0.485	mg/L	97	80	-	120	%Rec
B13I038-BS1	Lab Control Sample	B13I038-BS1	SW6010B	Chromium (Total)	1.98	mg/L	99	80	-	120	%Rec
B13I038-BS1	Lab Control Sample	B13I038-BS1	SW6010B	Lead	4.72	mg/L	94	80	-	120	%Rec
B13I038-BS1	Lab Control Sample	B13I038-BS1	SW6010B	Selenium	19.9	mg/L	100	80	-	120	%Rec
B13I038-BS2	Lab Control Sample	B13I038-BS2	SW6010B	Silver	501	µg/L	100	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Antimony	5.27	mg/L	105	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Arsenic	21.8	mg/L	109	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Barium	18.2	mg/L	91	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Beryllium	0.476	mg/L	95	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Cadmium	0.485	mg/L	97	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Chromium (Total)	1.98	mg/L	99	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Cobalt	4.7	mg/L	94	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Copper	2.34	mg/L	94	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Lead	4.71	mg/L	94	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Molybdenum	4.39	mg/L	88	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Nickel	4.69	mg/L	94	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Selenium	20.9	mg/L	104	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Thallium	18.9	mg/L	95	80	-	120	%Rec
B13I039-BS1	Lab Control Sample	B13I039-BS1	NA	Vanadium	5.31	mg/L	106	80	-	120	%Rec
B13I039-BS2	Lab Control Sample	B13I039-BS2	NA	Silver	479	µg/L	96	80	-	120	%Rec
B13I039-BS2	Lab Control Sample	B13I039-BS2	NA	Zinc	4.98	mg/L	100	80	-	120	%Rec
B13I040-BS1	Lab Control Sample	B13I040-BS1	2451	Mercury	0.00203	mg/L	101	85	-	115	%Rec
B13I042-BS1	Lab Control Sample	B13I042-BS1	NA	Mercury	0.0017	mg/L	85	85	-	115	%Rec

Notes:

%Rec	Percent Recovery
µg/L	Micrograms per liter
mg/L	Miligrams per liter

Appendix F
ISTT Closure

Appendix F: In Situ Thermal Treatment System Closure

PREPARED FOR: U.S. Environmental Protection Agency

DATE: May 8, 2015

This appendix documents the closure of the in situ thermal treatment (ISTT) system at the Frontier Fertilizer Superfund site in Davis, California. The ISTT system was shut down in October 2012 and allowed to cool to safe temperature until August 2013 when post-heating soil and groundwater samples were collected and reported. After stakeholders had a chance to review the draft *In Situ Thermal Treatment Completion Report for Frontier Fertilizer Superfund Site*, the last remaining ISTT components were abandoned, including electrodes, wells, and aboveground infrastructure (fugitive emission cap, fencing, and treatment pad).

Overview

The closure of the ISTT system was completed in two phases. During the first phase, Cascade Drilling completed abandonment of the electrodes and wells associated with the ISTT system. The second phase was completed in December 2014 and consisted of removing the fugitive emission cap, treatment pad, fence, and shallow electrodes (also called puppy electrodes) by Dolver, Inc. All ISTT closure phase work was overseen by CH2M HILL. Attachment F4 contains a photo log of closure activities.

Abandonment of Electrodes and Wells

This section discusses the abandonment of site preliminary monitoring points, temperature monitoring points (TMW), and electrodes. In addition, the well casing on MW-4C was found to be deformed during ISTT operations and was abandoned and re-installed as part of work completed to minimize drill rig mobilization costs.

Permits and Utility Clearances

Before abandoning subsurface infrastructure, permit number 14-034H was obtained from Yolo County Environmental Health on May 21, 2014. The permit granted approval from Yolo County for all well abandonments as well as the installation of MW-4C-R. USAN also was notified 53 hours in advance to mark utilities in the work area and issued ticket # 0201392.

Preliminary Monitoring Point Abandonment

Decommissioning procedures for the 26 preliminary monitoring points consisted of pressure grouting the wells at a minimum pressure of 25 pounds per square inch (psi) for 5 minutes, overdrilling the boreholes with a hollow-stem auger rig to 6 feet below ground surface (bgs), then backfilling the boreholes from 6 feet bgs to 5 feet bgs with neat cement and from 5 feet bgs to the surface with native material. The grout used was Type II-V cement mixed at approximately 6.5 gallons of water per 94 pounds of cement.

All preliminary monitoring points were abandoned according to the decommissioning procedure described above except EE-5 because it would not sustain pressure after numerous attempts; multiple additions of grout (in excess of the casing and filterpack volume) were pumped into the well and abandonment was initiated without meeting the 25 psi criteria. It was believed electrode EE-5 was losing pressure to the surface, though no grout was visible at the top of the wellhead, but the surface view was also obstructed.

Temperature Monitoring Well Abandonments

All 19 TMWs were abandoned by grouting the casing by tremmie pipe, overdrilling the borehole with a hollow-stem auger rig (depth of overdrilling depended on the well's treatment zone), and backfilling from 5 feet bgs to the surface with native materials. The grout used was Type II-V cement mixed at approximately 6.5 gallons of water per 94 pounds of cement. Table F-1 details the abandonment process.

TABLE F-1
Details of Temperature Monitoring Well Closure
Frontier Fertilizer NPL Site, Davis, California

Treatment Zones	Number of Temperature Monitoring Wells	Temperature Monitoring Well Completed Depth (feet bgs)	Closure Procedures
1	4	49	Grout the casing, overdrill to 6 feet bgs (10-inch auger), backfill with neat cement from 6 feet bgs to 5 feet bgs, backfill with native material to the surface.
2	5	86	
3	4	86	Grout the casing, overdrill to 10 feet bgs (10-inch auger), backfill with neat cement from 6 feet bgs to 5 feet bgs, backfill with native material to the surface.
4	1	66	
5	2	66	Grout the casing, overdrill to 20 feet bgs (10-inch auger), backfill with neat cement from 6 feet bgs to 5 feet bgs, backfill with native material to the surface.
6	2	86	
7	1	86	

Electrode Abandonment

Electrodes were decommissioned by overdrilling the top 20 feet of non-native electrode well material, sealing the borehole with grout via tremmie pipe to 5 feet bgs, and backfilling to the surface with native material. Pressure grouting was not performed on the majority of the electrodes being abandoned because the wells filled with silts as a result of subsurface mobilization of silts during thermal treatment.
All electrode silt levels were checked before decommissioning, and unsilted wells were pressure grouted with a minimum pressure of 25 psi until the grout began to set. The following wells were pressure grouted before overdrilling: B4, C1, C3, C6, C7, D11, E2, F12, F13, G2, G4, G7, G9, G13, H8, H9, I4, I5, I6, I7, I8, I9, I10, K6, and L11. Locations C4, F2, G6, and G10 were unable to sustain 25 psi of pressure, which was believed to be because of the electrodes shallow seals allowing for pressure loss to the surface and vadose zone; although unable to hold the pressure, there wells were overdrilled to 20 feet, and the borehole grouted to 5 feet bgs. For all locations the grout used was Type II-V cement mixed at approximately 6.5 gallons of water per 94 pounds of cement.

During abandonment of electrode F2, a subsurface void was discovered that required a modified abandonment procedure (described in fieldwork variations).

MW-4C and MW-4C-R

MW-4C was a 4-inch monitoring well installed in a 12 5/8-inch boring. Decommission was performed by overdrilling the borehole with 14-inch augers to a depth of 140 feet bgs and backfilling with grout via tremmie pipe to 5 feet bgs and native material to the surface.

On August 26, 2014, MW-4C-R was installed about 15 feet south of former MW-4C. A CH2M HILL geologist was onsite during the installation to determine appropriate screen placement. Split-spoon soil samples were retrieved every few feet beginning at 105 feet bgs to 130 feet bgs. Sandy layers were encountered similar to the original MW-4C, which supported installation of the screen at the same depths as MW-4C. Construction details of MW-4C-R are presented in Table F-2.

TABLE F-2
Well Construction Summary
Frontier Fertilizer NPL Site, Davis, California

Well ID	Zone	Type of Well	Installation Date	Ground Elevation (feet amsl)	Top of Casing Elevation (feet amsl)	Depth of Screen (feet bgs)	Depth of Filter Pack (feet bgs)	Completed Depth (feet bgs)	Total Depth (feet bgs)
MW-4C-R	A-1	Monitoring	8/26/2014	31.77	31.56	114 to 124	110 to 130	129	130

Notes:

Northing and Easting are in California State Plane coordinates, NAD27, Zone 2, measured in feet.

amsl = above mean sea level

MW-4C-R was developed on September 8, 2014, using the swab/bail/over-pump method. After swabbing and bailing the well, a Grundfos submersible pump was set at mid-screen (119 feet bgs) to pump water out of the well. The objective of the development was to purge a minimum of 5 casing volumes from the well (about 56 gallons per casing volume) and reach stabilized groundwater parameters (pH within 0.2 unit, electrical conductivity within 10 percent, temperature within 1 degree Celsius, and turbidity less than 10 nephelometric turbidity units [NTU]). Water quality parameters were measured using a Horiba U-22 multimeter instrument.

During development, approximately 100 gallons were removed from bailing before the turbidity was low enough to safely operate the pump. Pumping began at 11:54 a.m. at an average rate of 3 to 5 gallons per minute (gpm). Water quality measurements were recorded in the attached well development log (Attachment F1). When the 5 casing volume purge minimum was reached, the parameters had stabilized except turbidity, which was fluctuating between 460 and more than 1,000 NTU. The water became clearer around 3:00 p.m. (after 3 hours of pumping). Extraction continued for an additional 30 minutes, after which point the accuracy of the turbidimeter was questioned because the purge water appeared clear. The meter was submerged in deionized water and found to report 36 NTU. By 3:44 p.m., the water was visibly clear and the turbidity reading had stabilized at 32 NTU; at this point, development was stopped. Approximately 700 gallons (12.5 casing volumes) were removed during development.

MW-4C-R Wellhead Survey

The new well MW-4C-R was surveyed on September 30, 2014, by Fullen Surveying and Mapping, Inc.; see Table F-3 and Attachment F3 for details. The U.S. Environmental Protection Agency (EPA) requested additional wells be surveyed to confirm wellhead elevations. This also was done on the same day as MW-4C-R, and details are included in Table F-3.

TABLE F-3
Well Casing Survey Data
Frontier Fertilizer NPL Site, Davis, California

Well ID	Northing	Easting	Ground Elevation	LID Elevation	Casing Elevation
MW-4C-R	322873.57	2085275.47	31.77	31.86	31.56
MW-7D	323047.12	2085271.14	30.56	34.07	33.65
OW-15A	324335.46	2084540.45	33.38	33.47	32.98
OW-15B	324338.51	2084536.57	33.54	33.55	33.25
OW-15C	324335.63	2084540.87	33.39	33.44	32.93
OW-15D	324328.88	2084536.14	33.69	33.69	33.41
PW-1A	323352.26	2085935.20	32.12	32.12	31.96

TABLE F-3
Well Casing Survey Data
Frontier Fertilizer NPL Site, Davis, California

Well ID	Northing	Easting	Ground Elevation	LID Elevation	Casing Elevation
PW-1B	323342.22	2085936.65	32.32	32.32	31.93
PW-1C	323334.62	2085938.61	32.30	32.30	31.94
PW-2A	323581.40	2086237.13	32.16	32.16	31.76
PW-2B	323581.01	2086229.77	32.20	32.20	32.00
PW-2C	323580.83	2086221.09	32.28	32.28	31.98
PW-3A	323420.46	2086386.02	32.19	32.18	31.59
PW-3B	323420.48	2086394.15	32.01	31.93	31.83
PW-3C	323421.14	2086402.05	31.83	31.85	31.73
PW-4A	323141.44	2086392.86	31.68	31.68	31.23
PW-4B	323133.18	2086392.48	31.43	31.43	31.09
PW-4C	323125.51	2086392.45	31.43	31.43	31.09
X1-C	323063.01	2085191.13	31.65	31.71	30.61

Note:

Northing and Easting are in California State Plane coordinates, NAD27, Zone 2, measured in feet.

Waste Management

Construction Waste

During abandonment of the electrodes, the drill rig destroyed much of the insulation board used on the cap. This was becoming a trip hazard for the work, and 1 day was spent picking up the insulation material and high-density polyethylene (HDPE) liner on the southern portion of the cap. This material was sent to the City of Davis Landfill.

In addition, some of the cement wellheads that were broken up during the abandonment process were sent to the Yolo County Landfill. The HDPE, insulation, and cement wellheads were isolated from possible contact with potentially contaminated vapors from the ISTT system and therefore were not managed as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) wastes.

CERCLA Waste

The soil cuttings and removed pipe and electrode material from electrode abandonment within the thermal treatment volume were sent to an offsite CERCLA-compliant landfill. The cuttings were determined to be nonhazardous (using the post-heating soil sample results) and transported for disposal to Recology's Hay Road Landfill under profile/job # 5939. Prior to transport, facility compliance with the CERCLA Off-Site Rule was confirmed with the EPA Region 9 Regional Off-Site Contact.

Because MW-4C and MW-4C-R were outside the ISTT volume, the potential existed for different waste characterization results. Approximately 10 cubic yards of soil cuttings were generated from installing these wells. The MW-4C and MW-4C-R) soil cuttings were sampled for volatile organic compounds (VOCs) and metals for total concentrations, toxicity characteristic leaching procedure (TCLP), and soluble limit threshold concentration (STLC) methods. No results exceeded regulatory thresholds; results are provided in Attachment F2. The MW-4C-R soil was added to the existing profile and characterized as nonhazardous and transported for disposal to Recology's Hay Road Landfill under profile/job # 5939. Waste manifests are provided in Attachment F6.

Water

Development and decontamination water from installing MW-4C-R was treated by the onsite pump and treat system. Water was allowed to settle before being pumped into the waste tank of the pump and treat system. After transfer to the waste tank, water was pumped out of the waste tank, through a bag filter, and through the granular activated carbon treatment system. Settled solids and the bag filter were disposed of with the CERCLA wastes.

Fieldwork Variations

There were two significant variations in fieldwork – discovery of ammonia vapors and a subsurface void. These variations are discussed in the following sections.

Ammonia

During abandonment of electrode F12 on June 20, 2014, strong ammonia vapors were noted and work stopped to allow additional health and safety steps. When work resumed, fans were directed at the borehole and ammonia-specific Dräger tubes were used to screen air quality. Electrode F12 attenuated over the weekend and was abandoned without ammonia detections when work resumed. Work continued, and ammonia was detected in borehole at electrode F11 at a maximum of 14 parts per million (ppm) and 4 ppm in the breathing zone (without fan use). Fans were used for the remainder of the abandonment effort; with fans, the breathing zone was maintained at nondetect concentrations. The Dräger tubes were single use and therefore were consumed quickly, so the tubes were replaced with a Sperian Toxipro 3, which was able to detect ammonia concentrations in real time with an LCD readout. During the course of abandonment, other notable locations with elevated ammonia detections included borehole readings: F13 at 7 ppm and G9 at 55 ppm.

In general, the field team reported borehole ammonia detections were the most elevated at about 15 to 20 feet bgs. In addition, ammonia vapors were not reported during the abandonment of the southern side of the ISTT volume.

The detection of ammonia vapors resulted in EPA collecting additional groundwater samples in September 2014. Past ammonia data, possible causes of ammonia, and the current ammonia data are presented in Attachment F7.

Subsurface Void

Electrode F2 was abandoned slightly differently than other electrodes. Overdrilling of this electrode began on June 26, 2014. After advancing about 3 feet bgs, the auger encountered a hole. The auger was removed and the hole was estimated to extend to about 10 feet bgs. Because of low-light conditions, the total depth could not be determined. However, it appeared to extend significantly radially outward, although estimation of its extent was difficult because of the cap and surface soils obstructing the view. Because of the perceived potential for subsurface collapse, the crew evacuated quickly, and the area was partitioned and flagged with warning signs. Abandonment work transitioned to the west and northern electrodes in Stages 5, 6, and 7 while the void at F2 was investigated. Although it was believed that voids would be limited to the area around F2 because it was the portion of the site previously excavated and backfilled with different fill during a prior investigation, the remaining unabandoned electrodes were investigated. A ground penetrating radar (GPR) survey was performed over the site (the GPR survey report provided in Attachment F5). The GPR unit was attached to ropes and pulled over the void area to avoid endangering the operator. The GPR helped define the void boundaries, but because of the cap and insulation foam, void extent definition was not exact.

Besides the void at F2, other anomalies were found in the GPR survey, but some were near-surface anomalies such as leftover rock and grounding mats (e.g., chain-link fence) on the ground to the north. The additional anomalies under the cap were further investigated using a vacuum truck along the central and eastern sides of the I-row of electrodes, which is where the anomalies were found in the GPR survey. No voids were found by the GPR anomalies on the capped area (other than F2).

The GPR survey cleared the way for abandoning remaining electrodes in the center of the ISTT volume. Using the GPR survey and the site history of the former excavation, the western edge of the exclusion zone was brought closer to the void, which allowed field crews to lower a camera into the hole. The camera was lowered on a string and weighted so the lens pointed horizontally. To better gauge distance in the void and provide a focal point, an approximately 18-inch tube was extended in front of the camera. The walls of the void were estimated at approximately 24 inches away from the original boring, extending approximately 10 feet down. With the size of the void known, the drill rig was able to approach the void from the side with the least subsidence.

Abandonment of F2 was conducted in two stages: The void was stabilized, then the well was abandoned. On August 25, 2014, grout mix (1,500 gallons) and aggregate (1.5 cubic yards) were added to the void to approximately 5 feet bgs. Before filling, a polyvinyl chloride (PVC) pipe segment was centered over the electrode borehole. On September 2, 2014, the grout had set, the PVC pipe was used as a guide, and the well was overdrilled to 20 feet bgs and backfilled with grout to approximately 5 feet bgs. The top 5 feet were filled with native soil.

On August 25, 2014, the field notebook was accidentally dropped into the excavation at electrode F2 and was not safe to retrieve. A new notebook was started. The old notebook had been backed up through June 13, 2014. Separate to the notebook, field sheets were maintained to document electrode abandonment dates, silt levels, and the status of pressure grouting, which retained significant details of the abandonment.

Abandonment of Aboveground Infrastructure

The aboveground ISTT infrastructure was abandoned between December 1 and December 23, 2014. In addition to ISTT-related infrastructure, EPA asked that an onsite tank, unrelated to ISTT, be abandoned. CH2M HILL subcontracted Dolver, Inc., a minority-owned small business, to performer the abandonment.

Utility Clearances

Underground work was necessary for cap perimeter excavation and puppy electrode removal. USAN was notified November 21, 2014, and they cleared underground utilities and issued ticket # 0493136 for the work.

Cap

Cap material was segregated and removed using a backhoe. Stray insulation that had migrated away from the cap was picked up by hand by field crews. Because of the potential for the first layer of HDPE plastic and material below the first layer (for example, air inlets) to have contacted contaminated vapors, this material was managed to comply with the CERCLA offsite rule and was loaded to rolloff bins. Cap material above the first layer was managed as construction debris and loaded onto Dolver, Inc. dump trucks.

Pad and Fence

The asphalt containment pad was broken and scraped using a backhoe. Asphalt pieces were loaded to a dump truck for offsite transport and recycling. The fence posts and fabric were removed and taken for offsite recycling.

Puppy Electrodes

Puppy electrodes were traced to their location using the electrical conductors that were attached to each. A backhoe excavator was used to excavate each shallow electrode and remove the angle iron and electrical cable. The ground was then compacted and leveled.

Tank

The storage tank was cut into pieces for CERCLA waste disposal, and sediments from the tank bottom were also disposed of as CERCLA waste.

Waste

This section summarizes the disposal of waste material generated during aboveground ISTT decommissioning.

Reuse

To minimize waste disposal, HDPE plastic from the cap that was greater than approximately 5 square feet and cinder blocks were staged onsite for use by EPA’s other contractors. The plastic was repurposed for weed control. Offsite recycling included asphalt recycling at the Dolver, Inc. yard in McClellan, California, and fence material recycled at SIMS Metal Management in Sacramento, California.

Construction Waste

Construction debris was sent to the Sacramento County Landfill.

CERCLA Wastes

Potentially contaminated wastes (geotextile backed HDPE, plastic tank, tank sediments, electrode segments, below ground air vents, and screen) were managed as CERCLA wastes and send under nonhazardous manifest to Recology’s Hay Road Landfill. Prior to transport, facility compliance with the CERCLA Off-Site Rule was confirmed with the EPA Region 9 Regional Off-Site Contact. Waste manifests are provided in Attachment F6.

Attachments

List of Attachments:

- F1: MW-4C-R Bore Log, Well Diagram, and Development Log
- F2: MW-4C and MW-4C-R Waste Characterization Analytical Results (on CD)
- F3: Well Survey Results
- F4: Field Notes (on CD) and Photographic Log
- F5: Ground Penetrating Radar Survey Report
- F6: Waste Manifests (on CD)
- F7: Ammonia Investigation

F1: MW-4C-R Bore Log, Well Diagram, and Development Log

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET
385112.RI.01	MW-4C-R	1 OF 3

SOIL BORING LOG

PROJECT: FRONTIER FERTILIZER LOCATION: 3901 2nd ST, DAVIS / MW-4C REPLACEMENT

ELEVATION: TBD DRILLING CONTRACTOR: CASCADE LP WOODLAND CA

DRILLING METHOD AND EQUIPMENT: HOLLOW STEM AUGER, CME 95, 10 INCH AUGER

WATER LEVELS: START: 0800 / 08-26-2014 END: 1115 / 8-26-14 LOGGER: M GODWIN

DEPTH BELOW SURFACE (feet)	INTERVAL (feet)	RECOVERY (%)	#/TYPE (SS=Split Spoon, ST=Shelby Tube)	STANDARD PENETRATION TEST RESULTS 6-6-6 in (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, % gravel/sand/silt-clay	COMMENTS: Drilling and Soil Logging Comments/Notes, Drilling Observations and Samples.
						26 X 5 ft augers / BEGIN ~~HHH~~ ~~HHH~~ ~~HHH~~ ~~HHH~~ IIII
			↑		CLAY (CL) moist, brown (10YR 4/3), soft, plastic, no sand	
20					CLAY (CL) brown (~~7.5YR~~ 7.5YR 4/3) soft, plastic, no sand	
			SURFACE CUTTINGS		CLAY (CL) brown (7.5YR 4/3) soft, moist, plastic	MW-4C-R 0811 8/26/2014 FOR WASTE ASSESSMENT
40		100%				
					CLAY (CL) drk yellowish brown (10YR 4/4), v soft, moist, med plasticity, no sand	
					SILTY CLAY (CL) drk yllwsh brown (10YR 4/4) firm, moist, low-med plasticity, trace ~~silt~~ vf sand	▽ ~~ wet cuttings at surface
					CLAY (CL) yllwsh brw (10YR 5/4) soft to firm, moist, plastic, trace v w/l rndd coarse sand (5/0/95)	
60			↓			
70						

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PROJECT NUMBER	BORING NUMBER	
385112.RI.01	MW-4C-R	SHEET 2 OF 3

SOIL BORING LOG

PROJECT: FRONTIER FERTILIZER   LOCATION: 3901 2nd ST, DAVIS / MW-4C REPLACEMENT
ELEVATION: TBD   DRILLING CONTRACTOR: CASCADE DRILLING, LP
DRILLING METHOD AND EQUIPMENT: HOLLOW STEM AUGER / CME 95, 10 INCH AUGERS
WATER LEVELS: ~75 ft bgs   START: 0800/8-26-2014   END: 1115/8-26-14   LOGGER: M GODWIN

DEPTH BELOW SURFACE (feet)	INTERVAL (feet)	RECOVERY (%)	#/TYPE (SS=Split Spoon, ST=Shelby Tube)	STANDARD PENETRATION TEST RESULTS 6-6-6 in (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, % gravel/sand/silt-clay	COMMENTS: Drilling and Soil Logging Comments/Notes, Drilling Observations and Samples.
70–105	0 - 105	100%	CUTTINGS AT SURFACE		~~SILTY CLAY~~ SANDY CLAY (CL) yllwsh brwn (10 YR 5/4), v moist, ~~plas~~ soft-firm, plastic, v f to f grnd	∇ water with cuttings
					SANDY CLAY (CL) yllwsh brwn (10 YR 5/4) moist, soft, plastic some v.f.-f grnd sand	0925 @ 100 ft
105	105-106.5	80%	SPT		GRVLY CLAY (CL) v dark brwn (10YR 2/2), moist, stiff, plastic, f-crse subang-rndd qrtz + lith sand, w/rndd f granitic + metamorphic gravel (10/10/80)	
	107.5-109	100%	SPT		CLAY (CL) ylwsh brown (10YR 5/4) moist, stiff, mottled gray, plastic, trace san	
					CLAY (CL) ylwsh brwn (10 YR 5/4) mottled light brwnsh gry (2.5Y 6/2) stiff, moist, micaceous, w/ f sand, plastic, faintly laminated, w/ calcareous nodules (0/10/90)	
110	110.5-112	100%			SILT (ML) ylwsh brwn (10YR 5/4) mottled light brwnsh gray (2.5Y 6/2), moist, soft to firm thinly bdd w/ silty sand, FeOx staining, low plasticity, (0/10/90)	
					SILTY SAND (SM) ylwsh brwn (10YR 5/4), wet, firm, thinly bdd, med-grnd subang-subrndd qrtz + fldspr + lith sand, micaceous (0/70/30) / sand at base	
115	113.5-115	75%	SPT		SAND (SW) dark brwn (7.5YR 3/2) wet, loose, upward fining v crs to med sand, subang-wllrndd lith + meta + qrtz + fldsp + red/green chert, some fines (0/95/5) gradational w/ below	
	116.5-118				GRAVLLY SAND (SW) dark brwn (7.5YR 3/2) wet, loose, thinly bdd, upward fining, with gravel at base to 1/2", wllrndd, lith + meta + chert, crse-med subang-wllrndd sand, some mica. (15/80/5)	
120	119.5-121					

CH2MHILL	PROJECT NUMBER 385112.RI.01	BORING NUMBER MW-4C-R	SHEET 3 OF 3

SOIL BORING LOG

PROJECT: FRONTIER FERTILIZER LOCATION: 3901 2nd ST. DAVIS / MW-4C REPLACEMENT
ELEVATION: DRILLING CONTRACTOR: CASCADE DRILLING, LP
DRILLING METHOD AND EQUIPMENT: HOLLOW STEM AUGER - CME 95; 10 INCH AUGER
WATER LEVELS: START: 0800/9-26-2014 END: 1115/9-26-2014 LOGGER: M GOODWIN

DEPTH BELOW SURFACE (feet)	INTERVAL (feet)	RECOVERY (%)	#/TYPE (SS=Split Spoon, ST=Shelby Tube)	STANDARD PENETRATION TEST RESULTS 6-6-6 in (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, % gravel/sand/silt-clay	COMMENTS: Drilling and Soil Logging Comments/Notes, Drilling Observations and Samples.
120	119.5-121	100%	SPT		SILTY SAND (SM) olv brown (2.5Y 4/3), wet, loose, subang - sub/rndd lith + qrtz + chert sand, trace oblate lith grvl to 1 inch (5/70/25)	
	122.5-124	100%	SPT		SAND (SW) olv brown (2.5Y 4/3) wet, loose, upward fining, sand w/ grvl at base, crse-med subang-wll rndd qrtz + qrtz + ... sand, wll rndd lith + meta + chert gravel to 1 inch	
125					SAND (SW) S.A.A	
	125.5-127	100%	SPT	126.5-126.75	CLAY (CL) light yellowish brown (10YR 5/4) sharp contact w/ above and below	moist, stiff, plastic mottled gray w/ brown
	128.5-130	50%	SPT		GRAVELLY SAND (SG) olv brown (2.5Y 4/3) wet, loose to med dense, wll rndd lith + meta + chert oblate grvl to 1 inch, med - crse lith + qrtz + meta + chert subang - wll rndd sand (25/65/10) some fines	
130					SILTY GRAVL (GM) light olv brown (2.5Y 5/4) wet, dense, nonplastic oblate wll rndd lith + meta + qrtz grvl to 3/4 in, w/ med - crse sand (40/25/35)	
					GRVLY CLAY (CL) light olv brown (2.5Y 5/4) moist, soft to firm, plastic, laminated to thin bdd, wll rndd lith + meta + chert grvl to 1/2 inch, w/ clayey gravel (GC) at base, grvl to 1.5 inches, wll rndd	
					SILTY CLAY (CL) light olv brown (2.5Y 5/4), slight moist, stiff, mottled gray, trace Fe stain, low plasticity, trace f sand (0/5/95)	

TD = 130 ft bgs

PROJECT NUMBER: 385112.RI.01	WELL NUMBER MW-4C-R SHEET 1 OF 1

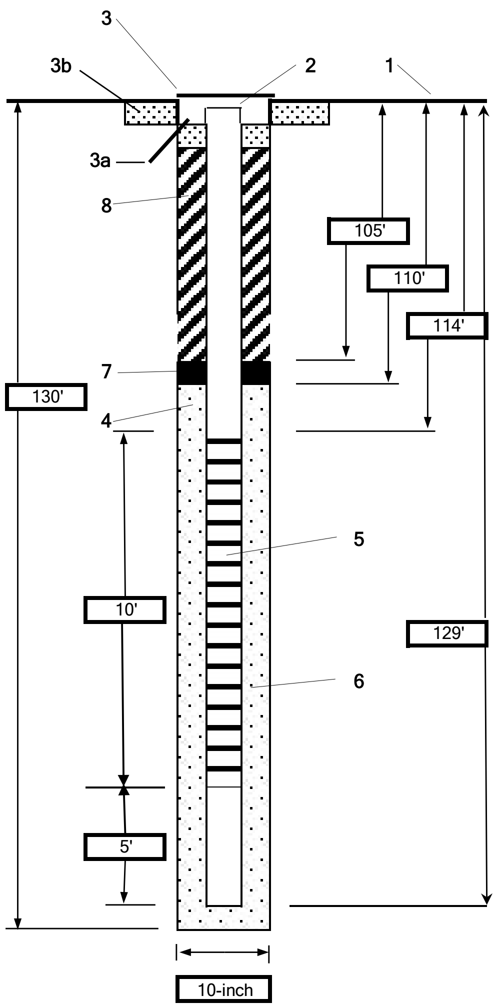
WELL COMPLETION DIAGRAM

PROJECT : Frontier Fertilizer LOCATION : 2nd Street, Davis CA

DRILLING CONTRACTOR : Cascade Drilling

DRILLING METHOD AND EQUIPMENT USED : CME 95 / 10 inch OD hollow stem auger

WATER LEVELS : not measured START: 08/26/2014 END: 08/26/2014 LOGGER : Mike Godwin



1- Ground elevation at well: Pending

2- Top of casing elevation: Pending

3- Wellhead protection cover type: Pending
- a) drain tube?: None
- b) concrete pad dimensions: Pending

4- Dia./type of well casing: 4-inch diameter / Schedule 40 PVC flush threaded with O-ring seals

5- Type/slot/size of screen: 4-inch diameter / 304 stainless steel continuously wound / 0.040

6- Type screen filter: #3 CEMEX Lapis Lustre Monterey Sand
- a) Quantity used: 19.5 x 50-lb bags (no transition sand)

7- Type of seal: CETCO Coated 3/8" Bentonite Pellets
- a) Quantity used: 3 x 5-gal buckets

8- Grout
- a) Grout mix used: 30 gal water, 8 x 47# Portland Type II/V; 1/8 x 50# bag CETCO Super Gel X Bentonite Powder 5 batches, = approx 4.5 CF, 170 gallons
- b) Method of placement: 1 inch diameter PVC tremie pipe

Development Date
Development method
Development time

Estimated purge volume

Comments Boring advanced to 130 ft bgs

124-129 ft bgs, 5 ft blank casing as sump
4-inch long endcap is not depicted.

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
345512.RT.01	MW-4C-R	SHEET 1 OF 2

WELL DEVELOPMENT LOG

PROJECT: Frontier Fertilizer
LOCATION: Frontier Fertilizer
DEVELOPMENT CONTRACTOR: Cascade
LOGGER: J. Teal / SAC
DEVELOPMENT METHOD AND EQUIPMENT USED: Swab / bail / pump
DATE: 9/8/14
SWAB START TIME: 0947
SWAB END TIME: 1003
INITIAL STATIC WATER LEVEL (feet BTOC): 50.44
BAIL START TIME: 0851, 1005
BAIL END TIME: 0947, 1045
POST BAILING WATER LEVEL (feet BTOC): 53.55
VOLUME OF WATER BAILED (gallons): 100
TAGGED DEPTH OF WELL (feet bgs): 119.5 (129 as built)
CAPACITY OF BAILER (gpm): 5 gallons
SCREENED INTERVAL (feet bgs): 114-124
TOTAL QUANTITY OF WATER DISCHARGED (gallons): ~900
MAXIMUM DRAWDOWN DURING PUMPING (feet): 119' btoc
DISPOSITION OF DISCHARGE WATER: Carbon treatment plant
RANGE AND AVERAGE DISCHARGE RATE (gpm): 5
REMARKS: Could not take parameter readings on first bailed * water - too viscous. Took readings on second round of bailing
TIME PUMP TURNED OFF: 1346

Time	Water Volume Discharged (gallons)	Water Level (ft BTOC)	pH (+/- 0.2)	Conductivity (mS/cm) (+/- 10%)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C) (+/- 1°C)	Redox (mV)	Remarks (color, odor, sheen, sediment, etc.)
1010	50	49.74	6.27	2.09	out of range	7.89	23.5	4	Parameters of FIRST bailed water *
1045	100	79.00	7.74	2.12	out of range	8.21	24.0	6	Parameters of LAST bailed water
1155	~~70~~ 120	79.00	7.74	2.12	out of range	8.21	24.0	6	
1209	~~85~~ 135	72.90	7.61	2.48	OOR	7.22	24.7	6	Adjusted flow to 5 gpm
1212	~~100~~ 150	83.0	7.58	2.53	OOR	7.35	23.8	5	water is clearing up
1215	165	84.50	7.51	2.57	OOR	7.81	23.5	5	
1218	180	84.60	7.43	2.61	562	7.61	23.7	5	Turb. in range now
1221	195	85.60	7.42	2.60	464	7.83	23.8	5	
1224	210	86.50	7.25	2.59	OOR	5.12	24.1	4	Turb back out of range
1227	225	86.55	7.22	2.58	OOR	4.78	24.1	4	
1230	240	86.50	7.25	2.59	OOR	4.75	24.2	4	
1233	255	86.50	7.22	2.59	~~OOR~~ 794	4.70	24.3	4	Turb back in range
1236	270	86.50	7.26	2.59	617	4.85	24.2	4	Turb decreasing
1239	285	86.57	7.22	2.59	OOR	4.76	24.2	4	Turb out of range
1242	300	86.65	7.22	2.61	734	4.80	24.1	4	Turb decreasing
1245	315	86.65	7.23	2.60	788	4.78	24.2	4	
1248	330	86.65	7.23	2.59	OOR	4.85	24.3	4	Turb out of range
1251	345	86.70	7.20	2.60	OOR	4.40	24.2	4	
1257	375	86.75	7.24	2.58	OOR	4.59	24.4	4	Change reads to 6 min
1303	405	86.65	7.23	2.57	OOR	4.45	24.5	4	
1309	435	86.63	7.24	2.59	OOR	4.67	24.4	4	
1315	465	86.78	7.23	2.60	OOR	4.47	24.3	4	
1321	495	86.50	7.28	2.60	OOR	4.98	24.2	4	
1327	525	86.71	7.26	2.58	OOR	4.95	24.3	4	
1333	555	86.38	7.26	2.55	975	4.90	24.4	4	Turb back in range
1339	585	86.70	7.27	2.54	954	4.48	24.7	4	
1345	615	86.45	7.26	2.55	757	4.35	24.6	4	
1351	645	86.44	7.23	2.55	816	4.35	24.5	4	
1400	690	86.42	7.25	2.56	601	4.38	24.8	4	change reads to 10 min $3 gpm
1410 (~~1409~~)	720	86.48	7.23	2.56	468	4.65	24.4	4	
1420	750	86.35	7.24	2.56	453	4.45	24.6	4	
1430	780	86.55	7.24	2.56	351	4.51	24.5	4	
1440	810	85.82	7.23	2.56	251	4.11	24.3	4	
1450	840	83.50	7.23	2.55	103	4.33	24.5	4	
1500	870	83.26	7.24	2.55	157	4.37	24.3	4	
1510	900	83.50	7.24	2.55	55	4.06	24.5	4	
1533	✓	83.58	7.23	2.56	32.4	4.14	24.5	4	Development complete

Notes:

1. Development will be considered complete when a minimum of ~~10~~ 5 well volumes have been removed (by bailing and pumping combined) and when parameters have stabilized to within a pH of 0.2 unit, EC is within 10 percent, and temperature is within 1°C.
2. Note the volume of water discharged, water level, and field parameters throughout development. This includes swabbing and bailing stage. Remarks about the water being bailed should also be documented on the development log. Remarks about sand being bailed. Record times each activity started/stopped.

32.4

119.5

F2: MW-4C and MW-4C-R Waste Characterization Analytical Results (on CD)

F3: Well Survey Results

MONITORING WELLS

FRONTIER FERTILIZER SITE

BY FULLEN SURVEYING AND MAPPING, INC.

9/30/2014

FSM Project CH2M0005

WELL DESIGNATION	NORTHING	EASTING	GROUND ELEV	LID ELEVATION	CASING ELEV
MW-4C-R	322873.57	2085275.47	31.77	31.86	31.56
MW-7D	323047.12	2085271.14	30.56	34.07	33.65
OW-15A	324335.46	2084540.45	33.38	33.47	32.98
OW-15B	324338.51	2084536.57	33.54	33.55	33.25
OW-15C	324335.63	2084540.87	33.39	33.44	32.93
OW-15D	324328.88	2084536.14	33.69	33.69	33.41
PW-1A	323352.26	2085935.20	32.12	32.12	31.96
PW-1B	323342.22	2085936.65	32.32	32.32	31.93
PW-1C	323334.62	2085938.61	32.30	32.30	31.94
PW-2A	323581.40	2086237.13	32.16	32.16	31.76
PW-2B	323581.01	2086229.77	32.20	32.20	32.00
PW-2C	323580.83	2086221.09	32.28	32.28	31.98
PW-3A	323420.46	2086386.02	32.19	32.18	31.59
PW-3B	323420.48	2086394.15	32.01	31.93	31.83
PW-3C	323421.14	2086402.05	31.83	31.85	31.73
PW-4A	323141.44	2086392.86	31.68	31.68	31.23
PW-4B	323133.18	2086392.48	31.43	31.43	31.09
PW-4C	323125.51	2086392.45	31.43	31.43	31.09
X1-C	323063.01	2085191.13	31.65	31.71	30.61

Coordinates shown hereon are based on California Coordinate System, Zone 2 (NAD27).

Elevations shown hereon are based on NGVD29 vertical datum.

F4: Field Notes (on CD) and Photographic Log

In-Situ Thermal Treatment Closure Photo Log

Hollow stem auger rig for electrode and well overdrilling.

Overdrilling.

Twisted electrode segment removed from boring.

Electrode cables wrapped around auger.

Pressure grout at a wellhead.

Void found at electrode F2.

Ground-penetrating radar performed to search for additional voids.

Vacuum truck excavation at wellheads to search for additional voids.

Development rig setup on MW-4C-R.

Development of MW-4C-R.

Water extracted from MW-4C-R near end of development.

Breakup of the asphalt treatment pad.

Removal of the cap.

Collection of stray cap insulation around the site.

Excavation of puppy electrodes. Pink flags denote location of puppy electrodes (Note: camera was undergoing failure of automatic opening lens cover).

A removed puppy electrode, prior to disposal.

Moving the 6,500-gallon tank into position to be later cut into pieces prior to disposal.

Excavation of buried cap material around perimeter.

Final site grading.

F5: Ground Penetrating Radar Survey Report

subtronic corp

NULCA - NASSCC - APWA - AWWA - Members

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Martinez, California 94553
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Fax No. (925) 228-8737
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GEOPHYSICAL SUBSURFACE INVESTIGATION FOR SINK HOLES

ISTT, FRONTIER FERTILIZER SITE
FOR CH_2MHILL

July 16th, 2014.

Objective:

On July 9th 2014, Subtronic performed a geophysical survey over the northern portion of the thermal remediation system at ISTT, Frontier Fertilizer in Davis, California. The purpose of the geophysical survey was to locate sink holes using ground penetrating radar.

Site Description:
A large portion of the site is covered by a hexagon shaped black Visqueen cover. Sticking out of the black plastic were valves and hoses laid out in rows. Underneath the southern portion of the black plastic were two layers of thermal insulation. The soil on site appeared to be clayey.

Geophysical Equipment Used In This Survey:
The GSSI system 3000 ground penetrating radar (GPR) with a 400 MHz antenna.

GSSI SIR-3000
A ground penetrating radar (GPR) system graphically records subsurface structures. Both geological and man made structures are recorded by the introduction of a pulse of electromagnetic energy into the ground. Reflected pulses received by the antenna are then processed for measurable contrast in electrical properties. The result is a visual pseudo-cross-sectional profile.

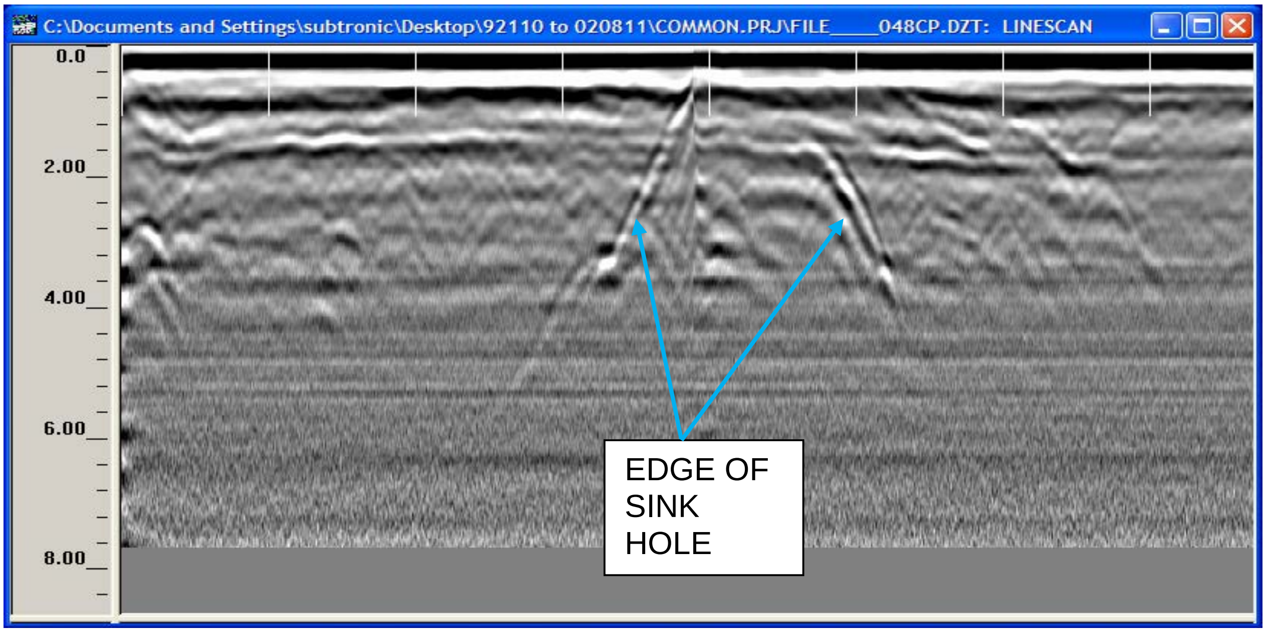
Primary applications of the GPR are detecting underground storage tanks, foundations, buried drums, previously excavated areas and detecting subsurface metallic and non-metallic utilities.

The GPR depth penetration is severely limited by clay-rich soil. Radar waves can penetrate deeper in sandy and gravelly soils.

Survey Methods:

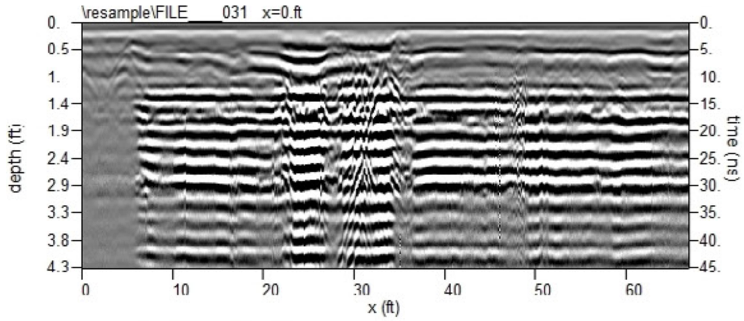
Matt Marlatt of CH_2MHILL indicated he wanted the northern portion of the Visqueen scanned for sink holes and a few selected passes over an existing sink hole. A grid 190 feet long and 57 feet wide was scanned with ground penetrating radar on traverses spaced 3 feet apart. Radargrams were reviewed in the field for sink hole type anomalies. Interpreted sink hole anomalies were marked on the ground in pink paint. As this report was being written a 2nd sink hole was found.

Below is an example of a radargram over sink hole in sandy soil. The soils below the Visqueen caused strong reverberations which is seen on the radar profiles (see the subsequent radargrams). Air voids in sink holes can also cause reverberations. Reverberations identified below a foot of soil were interpreted as a void. Strange shape reflectors similar to the one in the radargram below were also interpreted as possible sink holes.



Survey Results

The radargrams over the sinkhole northeast of well TMW8, are labeled 31 through 42. Clear indications of anomalous readings, i.e. sink holes were interpreted from these radargrams. The surface area of the sink hole was estimated to be 215 feet square (see Plate 1).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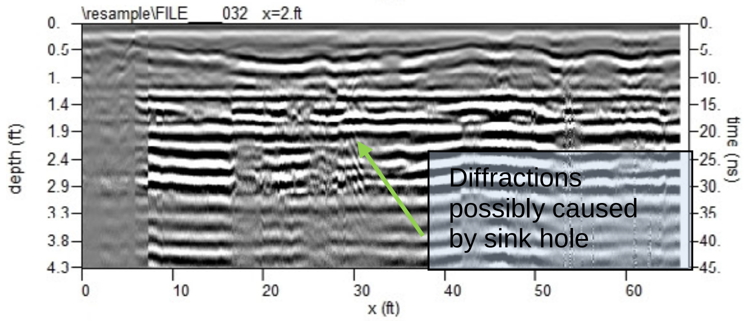
x (ft)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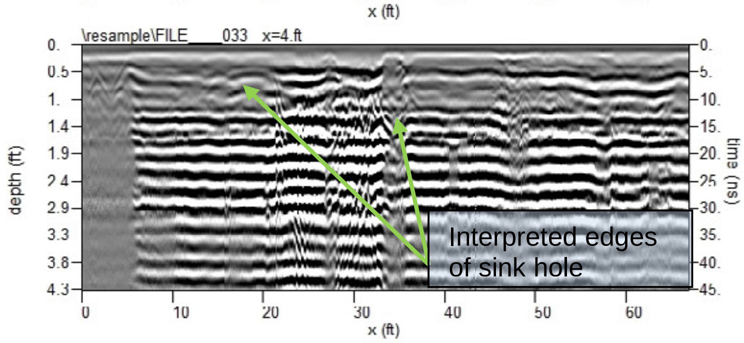
depth (ft)
time (ns)
x (ft)
Diffractions possibly caused by sink hole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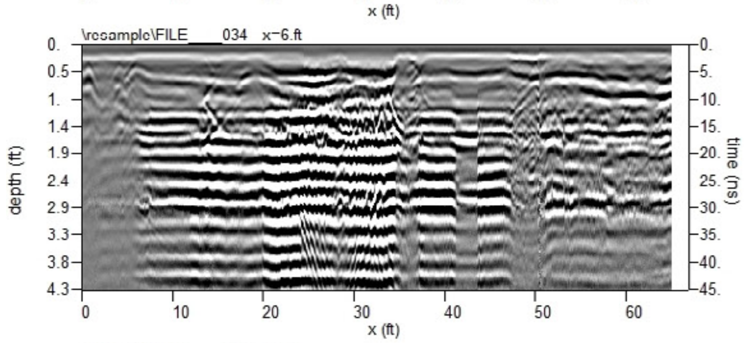
depth (ft)
time (ns)
x (ft)
Interpreted edges of sink hole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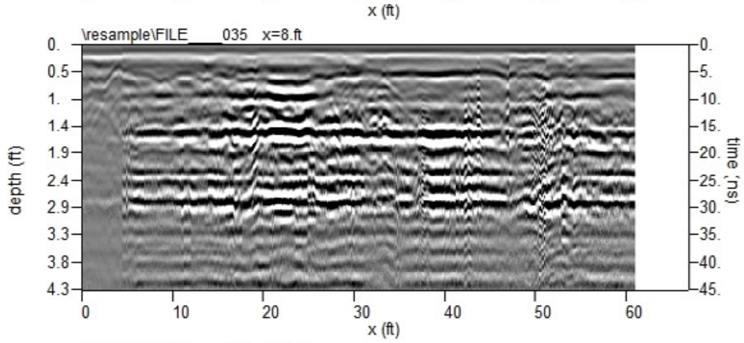
x (ft)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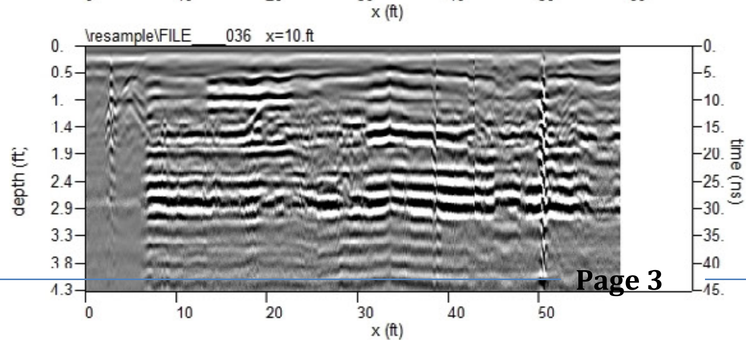
x (ft)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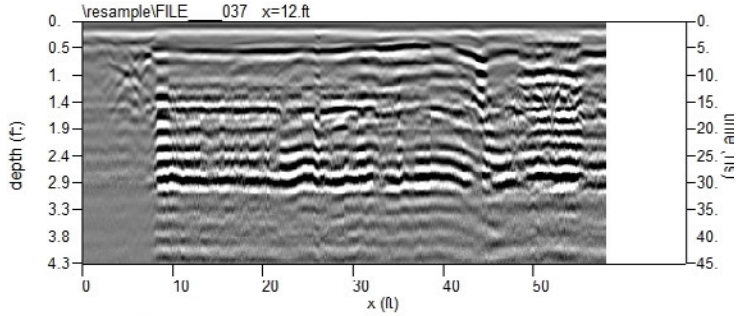
time (ns)
x (ft)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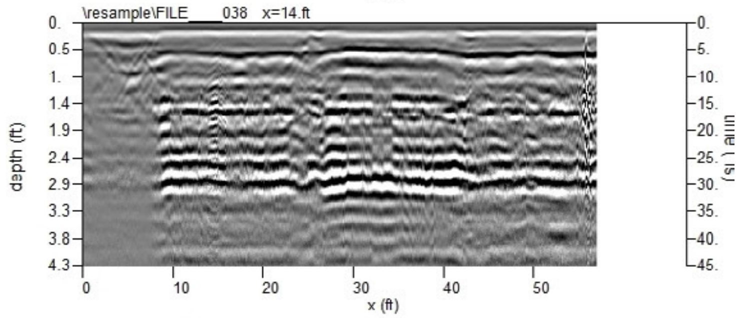
depth (ft)
x (ft)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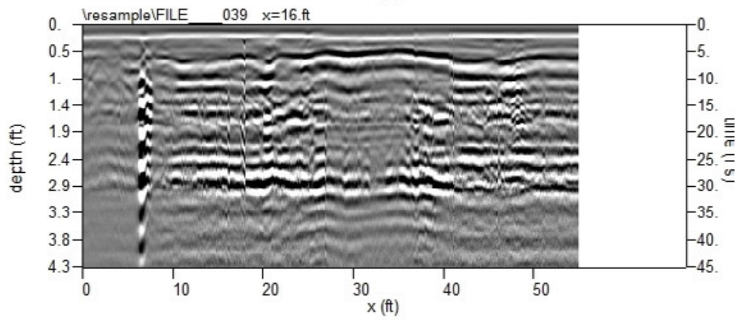
depth (ft)
x (ft)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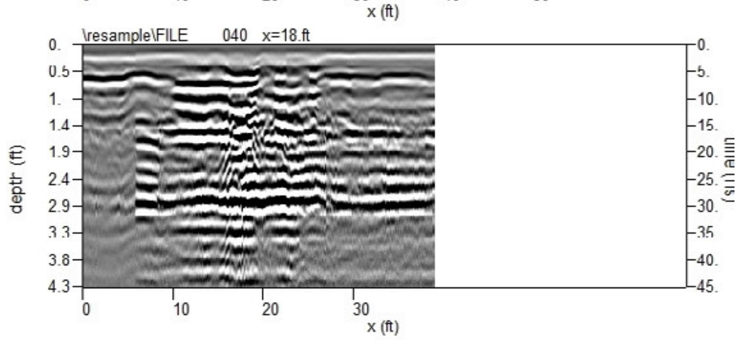
depth (ft)
x (ft)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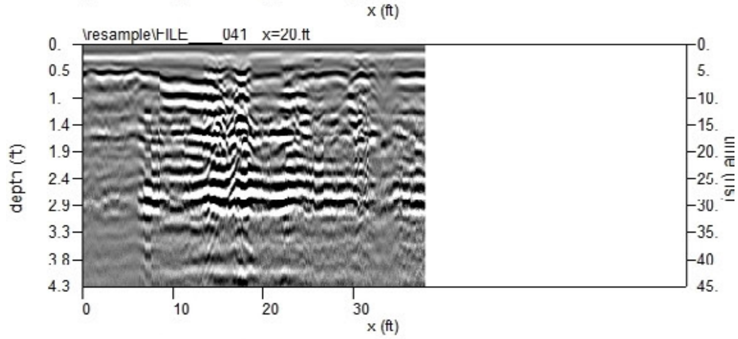
x (ft)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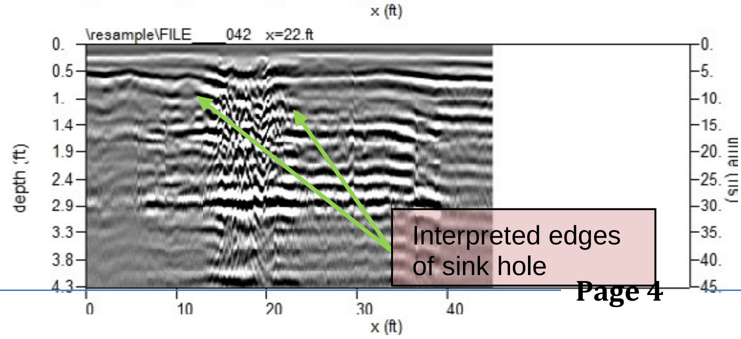
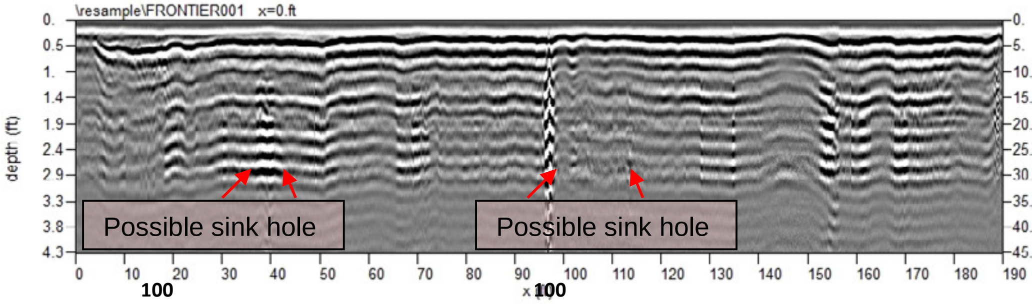
x (ft)


\resample\FILE____042 x=22.ft
Interpreted edges of sink hole
x (ft)

The radargrams collected over the northern grid are shown below. Six anomalous areas were found on the radargrams collected over the 190 foot by 57 foot grid. Three areas were found in the Visqueen covered area and three were found in the soil covered area north of the Visqueen cover. The soil covered anomalies were interpreted to be caused by surface features, such as buried fencing. The anomalies found under the Visqueen occur at a deeper depth and should be considered as possible sink holes. The radargrams around the 2nd known sink hole did not appear as standout anomalies (see Plate 1 for anomaly locations).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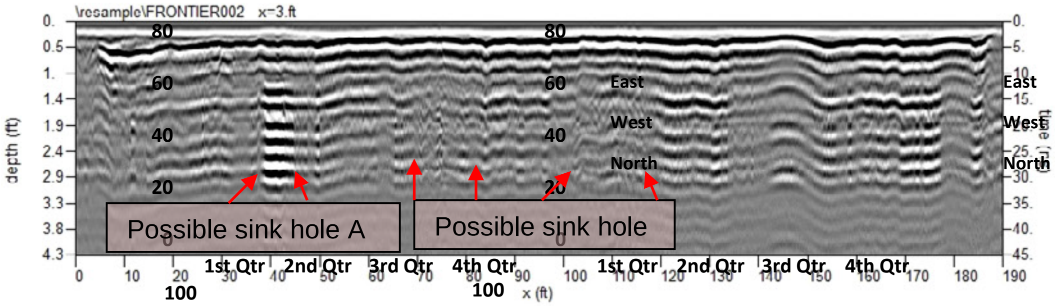
x (ft)
Possible sink hole
Possible sink hole
100
100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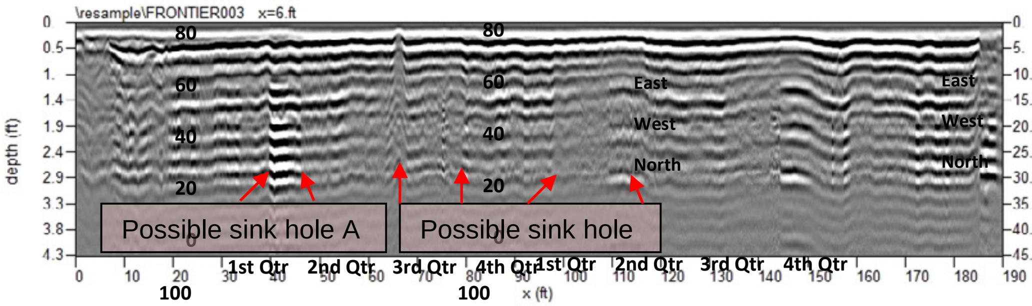
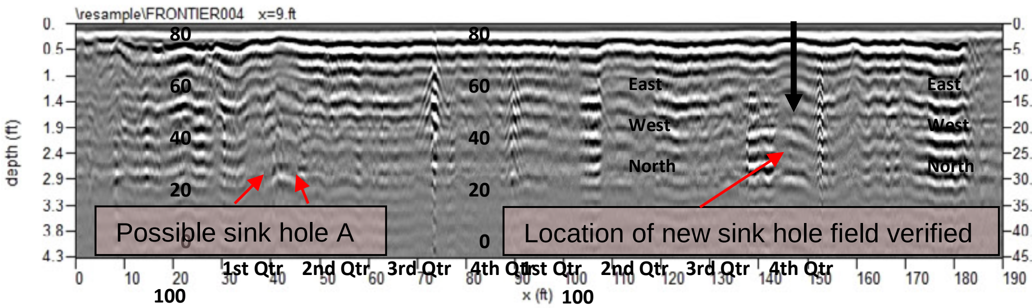
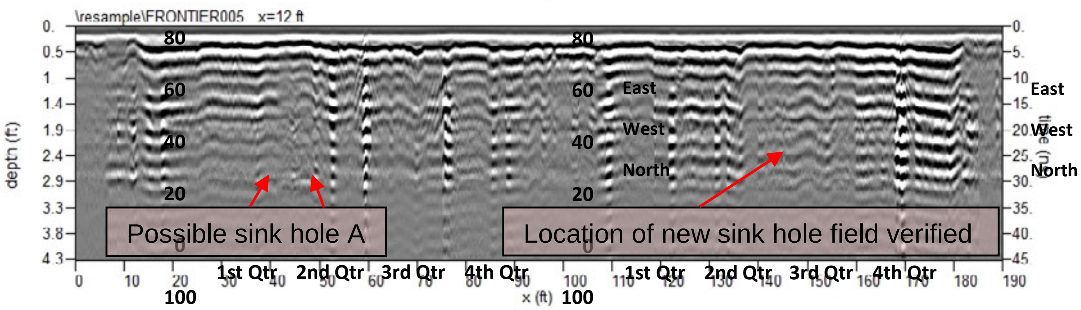
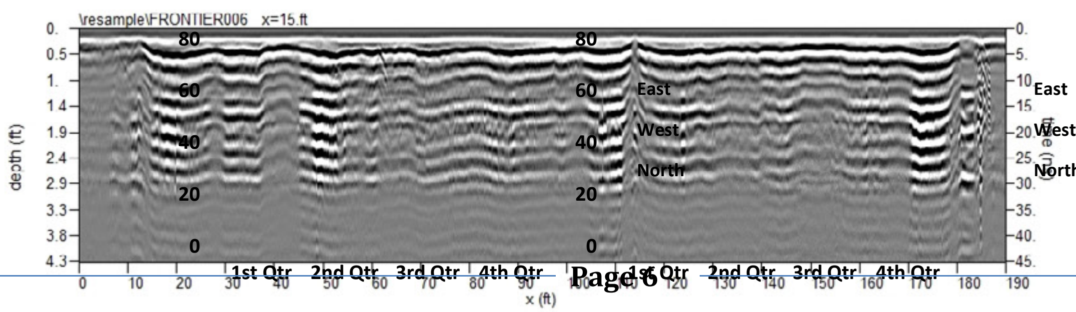
depth (ft)
time (ns)
x (ft)
Possible sink hole A
Possible sink hole
East
West
North
East
West
North
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
100
100


\resample\FRONTIER003 x=6.ft
depth (ft)
time (ns)
x (ft)
Possible sink hole A
Possible sink hole
East
West
North
East
West
North
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
100
100


\resample\FRONTIER004 x=9.ft
depth (ft)
time (ns)
x (ft)
Possible sink hole A
Location of new sink hole field verified
East
West
North
East
West
North
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
100
100


\resample\FRONTIER005 x=12.ft
depth (ft)
time (ns)
x (ft)
Possible sink hole A
Location of new sink hole field verified
East
West
North
East
West
North
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
100
100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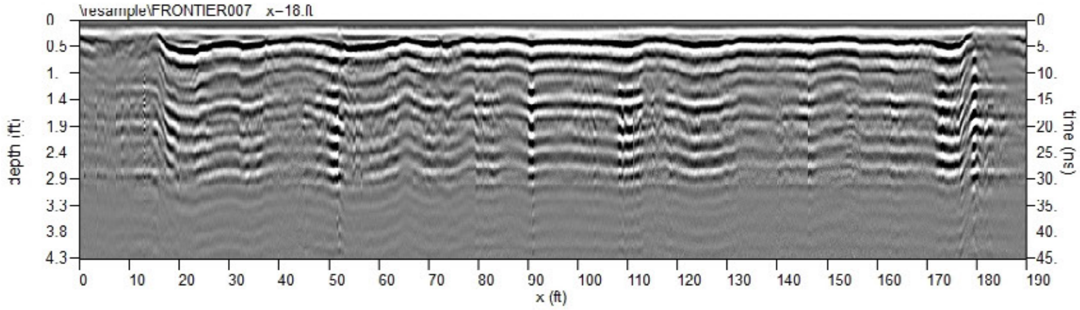
depth (ft)
time (ns)
x (ft)
East
West
North
East
West
North
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr
1st Qtr
2nd Qtr
3rd Qtr
4th Qtr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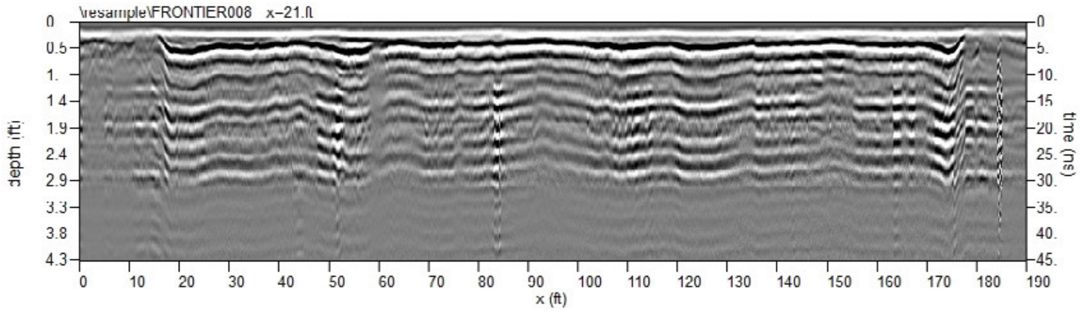
depth (ft)
time (ns)
x (ft)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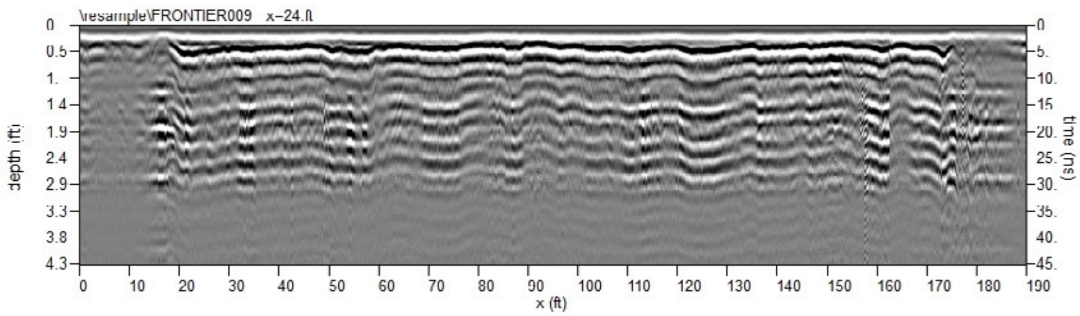
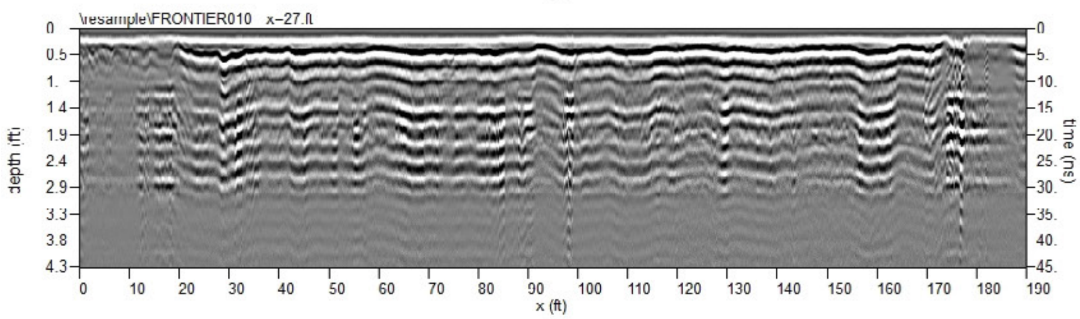
time (ns)
x (ft)


\resample\FRONTIER009 x=24.ft
depth (ft)
time (ns)
x (ft)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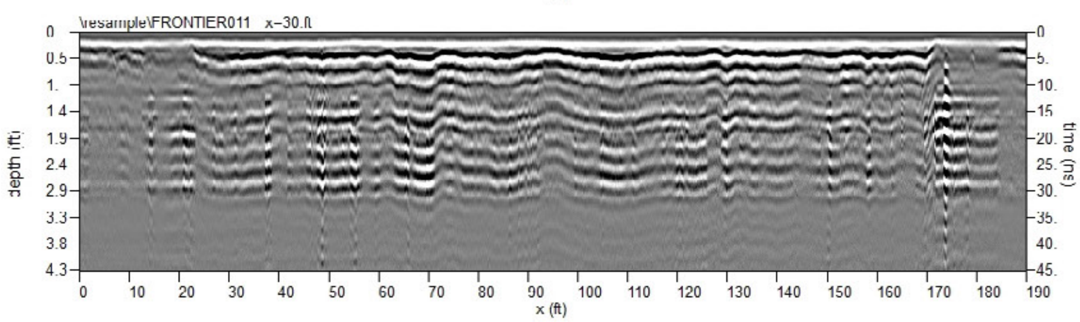
depth (ft)
time (ns)
x (ft)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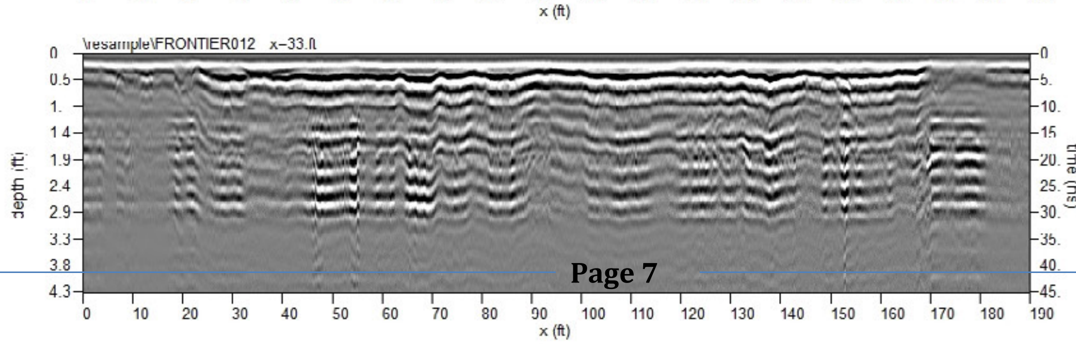
depth (ft)
time (ns)
x (ft)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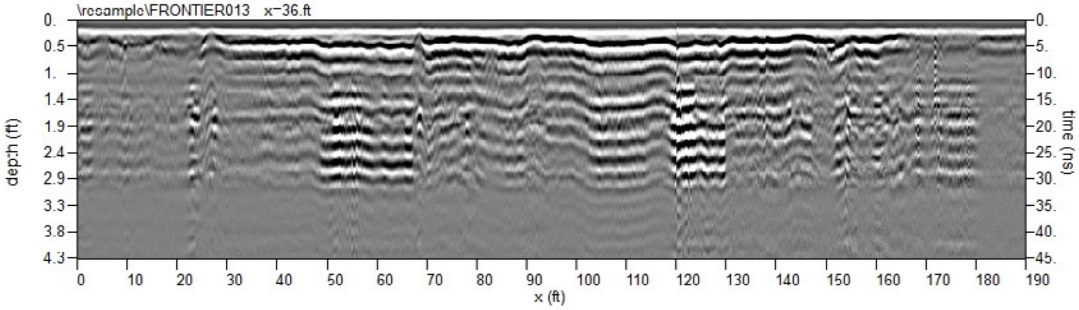
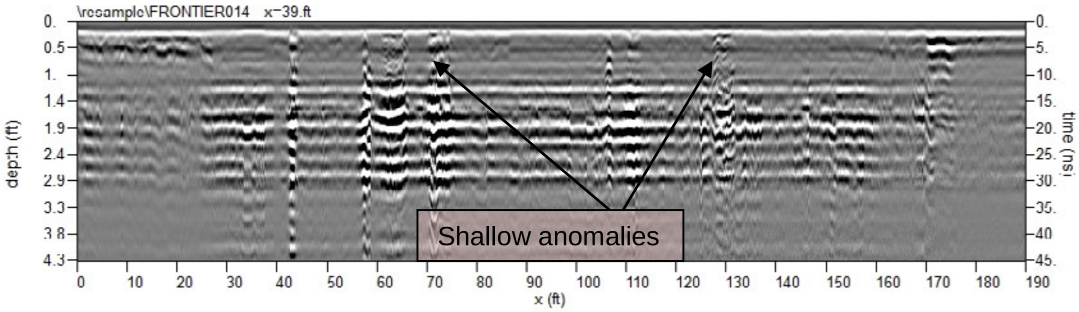
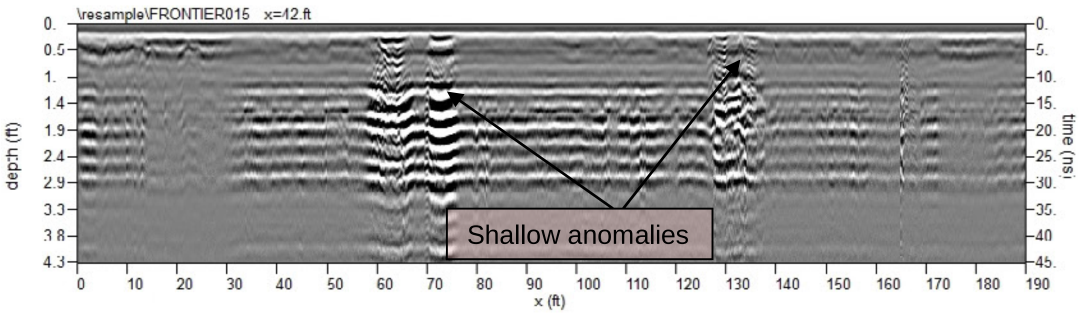
depth (ft)
time (ns)
x (ft)


\resample\FRONTIER013 x=36.ft
depth (ft)
time (ns)
x (ft)


\resample\FRONTIER014 x=39.ft
depth (ft)
time (ns)
x (ft)
Shallow anomalies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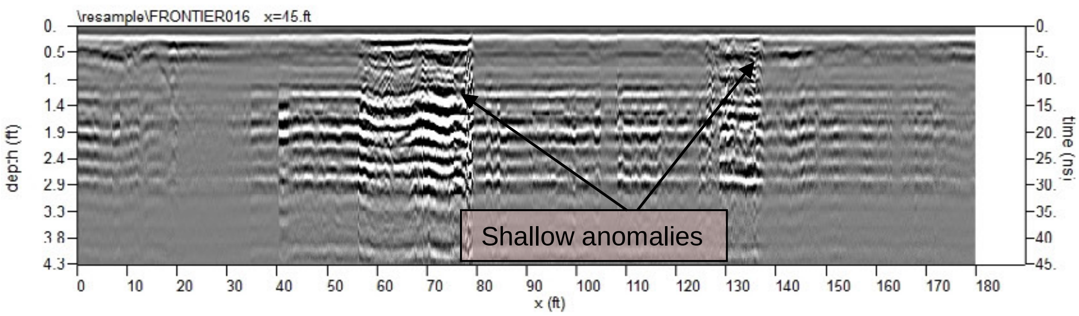
depth (ft)
time (ns)
x (ft)
Shallow anomalies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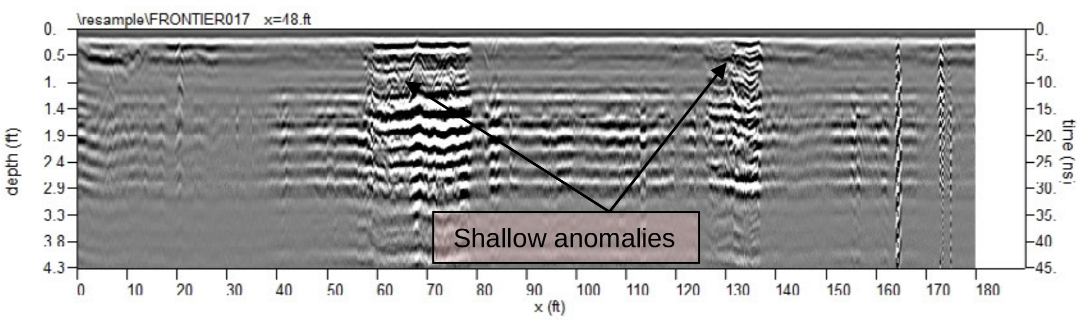
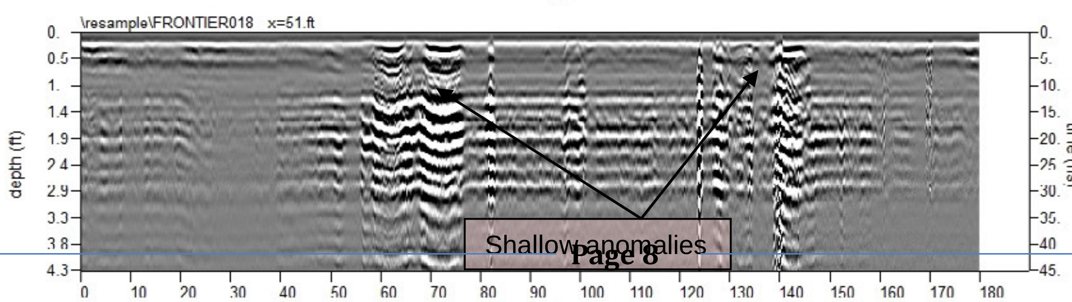
depth (ft)
time (ns)
x (ft)
Shallow anomalies


\resample\FRONTIER017 x=48.ft
depth (ft)
time (ns)
x (ft)
Shallow anomalies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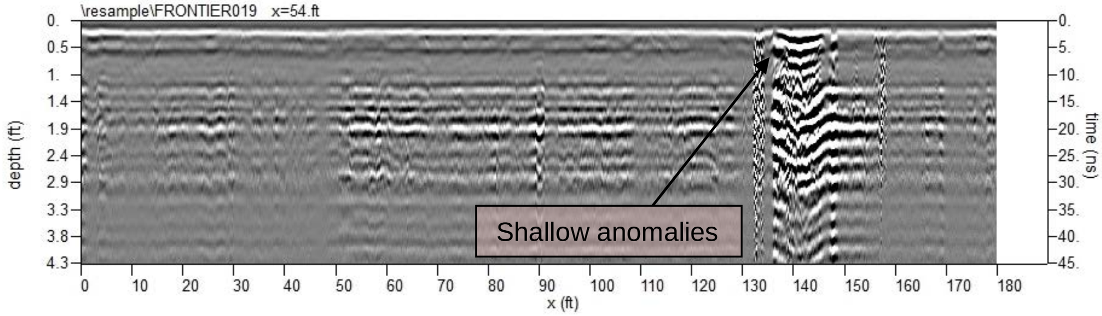
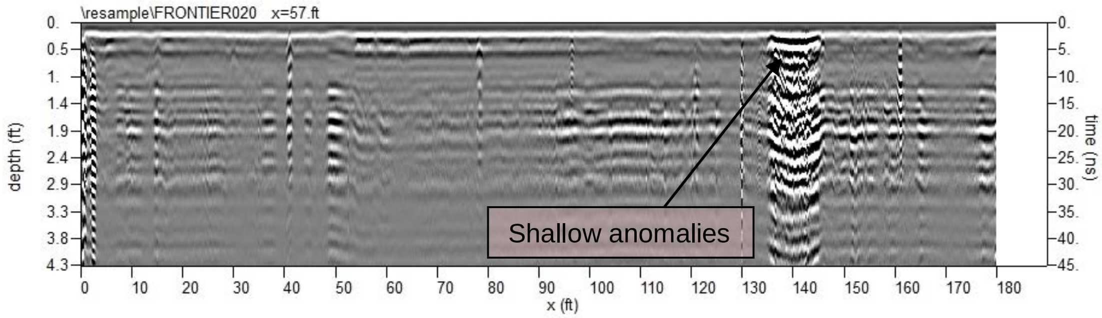
depth (ft)
time (ns)
x (ft)
Shallow anomalies


\resample\FRONTIER019 x=54.ft
depth (ft)
time (ns)
x (ft)
Shallow anomalies


\resample\FRONTIER020 x=57.ft
depth (ft)
time (ns)
x (ft)
Shallow anomalies

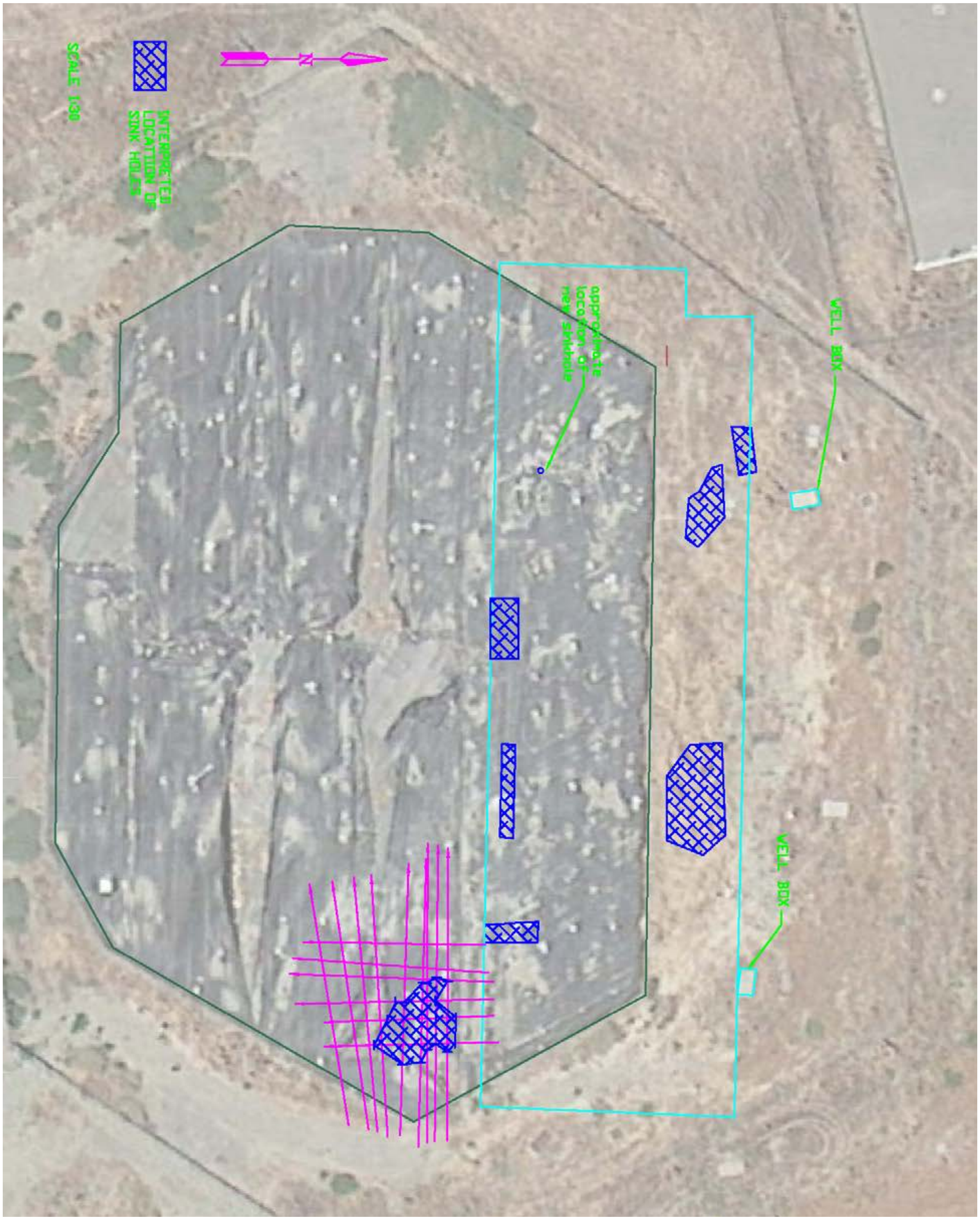


Plate 1. Site image showing locations of anomalies.

Conclusions:

Ground penetrating radar appeared to help delineate the extents of the sink hole northeast of well TMW8. From the radargrams the extents of the sink hole are estimated to be 215 square feet. Radargrams of the 190 foot by 57 grid show three shallow anomalies in the soil covered area (north of the Visqueen covered area) which are interpreted to be caused by shallow buried objects (possibly buried fencing) not related to sink holes. Three anomalies were found in the Visqueen covered area just north of the thermally insulated area are considered possible sink holes.

Due to the clayey soils found on site that is a strong possibility that not all sink holes were found.

Limitations:

The subsurface geology composition severely limits depth of penetration. Geophysical anomalies may not represent unique solutions. Apparently similar anomalies may be created by different subsurface phenomena.

Report Prepared By:

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F6: Waste Manifests (on CD)

F7: Ammonia Investigation

F7: Frontier Fertilizer Superfund Site Ammonia Investigation

PREPARED BY: CH2M HILL

Ammonia vapors were noted at the Frontier Fertilizer Superfund site in Davis, California (site) by field staff during the summer 2014 abandonment of the in situ thermal treatment (ISTT) system, which was operated from March 2011 to October 2012 to treat contaminated soil and groundwater. This technical memorandum examines past ammonia uses at the site, summarizes the ammonia vapors detected, and presents the results of an ammonia sampling effort performed by the U.S. Environmental Protection Agency (USEPA).

Background

The site operated as a fertilizer distribution facility, ceasing operations in the 1980. Anhydrous ammonia was stored in an aboveground tank in the northwestern corner of the site. It is assumed the tank was decommissioned in the late 1990s with other site decommissioning activities, but records of this task could not be found. The tank was visible in 1987 photographs obtained from the California Department of Toxic Substances Control (DTSC) but was no longer present in photographs in the same area in 2000. There is no established drinking water maximum contaminant level (MCL) for ammonia. The USEPA health advisory limit is 30 milligrams per liter (mg/L), and ammonia has a taste and odor threshold of 1.5 mg/L in groundwater, with corresponding values of 24.7 and 1.24 mg/L as nitrogen (mg/L-N), respectively.

In 1988, DTSC sampled groundwater wells for ammonia at the site. Results are presented in Table 1. Most of the wells in Table 1 have since been abandoned. Wells MW-7B and MW-3C had detections of ammonia above 1.24 mg/L-N.

TABLE 1
1988 Ammonia Results
Frontier Fertilizer Superfund Site, Davis, California

Well	Ammonia-N	Well	Ammonia-N
AW-2A	0.11	MW-3B	0.11
AW-3	Brl	MW-4B	0.18
AW-6	Brl	MW-5C	Brl
MW-3A	0.17	MW-6C	0.1
MW-4A	0.11	MW-7C	0.09
MW-5A	Brl	MW-3C	2
MW-5B	0.16	MW4C-1	Brl
MW-6A	0.11	MW1-1	Brl
MW-6B	0.06	MW2B-1	Brl
MW-7B	2.2	LCW-1	Brl
MW-2A	Brl	74-1-1	0.76

Note:

Original table was lacking proper annotations, the following are assumed:

Brl = below reporting level
Units = mg/L-N

Ammonia Vapors during In Situ Thermal Treatment Decommission

During the June and July 2014 electrode abandonment at the site, ammonia vapors were detected by field staff during abandonment of Stage 2 and 3 electrodes. Most notably, the boreholes of F11, F13, and G9 contained ammonia at 14, 7, and 55 parts per million (ppm). The highest ammonia concentrations were believed to correlate to periods when soil from below 15 below ground surface (bgs) was being removed from the boreholes.

Ammonia Causes

Ammonia vapors were not an issue at the site during previous subsurface ISTT work, and there were no reports of odors by field crews during installation of the ISTT electrodes in 2009. In addition, if ammonia was present in the subsurface before ISTT, the soil vapor extraction system that operated would have provided sufficient oxygen to allow conversion of the ammonia into nitrite (nitrification) and/or flow to remove the vapors.

It is likely that ammonia vapors were caused by the decomposition of nitrogen-containing organic matter, such as urea, in the ISTT volume. Through bacterial decomposition, nitrogen-containing compounds are converted to ammonia (ammonification), and then the ammonia is converted to nitrite and nitrate (nitrification). Different bacteria perform ammonification and nitrification, and each thrives at different temperatures; ammonification bacteria operate most efficiently at 40 to 60 degrees Celsius (°C) and can survive higher temperatures, while nitrification bacteria are inactive at temperatures exceeding 49°C. Ammonia odors were observed when abandoning electrodes with subsurface temperatures above 50°C, which would be explained by inactivated nitrifying bacteria. During July 2014, Stage 2 temperatures were calculated at 20 feet bgs at 64°C. Without active nitrifying bacteria, ammonification bacteria would create ammonia that would accumulate, similar to the way ammonia accumulation is observed in compost piles maintained at 65°C (Alexander, 1961).

A lack of ammonia odors during Stage 1 abandonment also supports the decomposition theory. Since Stage 1 had been turned off almost a year earlier than Stages 2 and 3, the temperatures in Stage 1 were near ambient and would allow nitrifying bacteria to convert ammonia.

Ammonia Investigation

After discovering the ammonia vapors during the ISTT decommissioning, USEPA initiated a round of groundwater sampling to check for ammonia at site wells. The investigation focused on wells downgradient of the ISTT treatment volume and wells with past ammonia data. Table 2 presents sample results from this sampling.

Ammonia was detected at a maximum of 1.5 mg/L at well X-1A, which is the USEPA odor and taste threshold. The temperature of well X-1A groundwater remains elevated and was recorded at 41°C during sampling in September 2014. Because well X-1A is on the edge of the ISTT treatment, the temperature is likely the result of mixing of warmer water from the ISTT with cooler water from outside ISTT. All other results were significantly lower than the USEPA odor and taste threshold. The wells with results from 1988 show a decreased in ammonia concentrations. Ammonia does not appear to be a groundwater concern at the site.

TABLE 2
September 2014 Ammonia Results
Frontier Fertilizer Superfund Site, Davis, California

Well	Sample ID	Type	Date Sampled	Result	Units	Flag	1988 Result, if Available, Converted to mg/L
AW-2A	AW2A-A314	N	9/25/2014	0.099	mg/L		0.13
AW-2B	AW2B-A314	N	9/25/2014	0.025	mg/L	U	N/A
MW-3C	MW3C-A314	N	9/11/2014	0.025	mg/L	U	2.4
MW-7B	MW7B-A314	N	9/23/2014	0.039	mg/L	J	2.7
MW-7D	MW7D-A314	N	9/25/2014	0.025	mg/L	U	N/A
MW-8A	MW8A-A314	N	9/9/2014	0.025	mg/L	U	N/A
MW-8B	MW8B-A314	N	9/9/2014	0.025	mg/L	U	N/A
X-1A	X1A-A314	N	9/23/2014	1.5	mg/L		N/A
X-1B	X1B-A314	N	9/26/2014	0.025	mg/L	U	N/A
X-2A	X2A-A314	N	9/26/2014	0.025	mg/L	U	N/A
X-2B	X2B-A314	N	9/26/2014	0.025	mg/L	U	N/A
X-6A	X6A-A314	N	9/23/2014	0.035	mg/L	J	N/A
X-6B	X6B-A314	N	9/19/2014	0.75	mg/L	J	N/A

Notes:

The 1988 results presented ammonia in units of ammonia as N, and the 2014 results presented as ammonia. Tables 1 and 2 should not be directly compared. The 1988 results were converted by multiplying 1.22 to convert from ammonia as N to total ammonia; the conversion factor is the ratio of molecular weights.

J = The reported result for this analyte should be considered an estimated value.
N/A = Not available; well was not sampled in 1988.
U = The analyte was non-detect.

Conclusion

Ammonia was not detected above the USEPA health advisory limit or the taste and odor threshold in groundwater samples. The highest detection of ammonia in groundwater was from well X-1A and was likely the result of the well extracting shallow groundwater from the ISTT volume, which is at temperatures to promote in situ ammonia creation but not to promote degradation into nitrite/nitrate. As Stages 2 and 3 cool and nitrifying bacteria become active, remaining ammonia is likely to be converted to nitrate.

References

Alexander, Martin. 1961. *Introduction to Soil Microbiology*.